CALIFORNIA RURAL LAND USE

AND

MANAGEMENT

A History of the Use and Occupancy
of Rural Lands in California

By

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1944

United States Department of Agriculture
Forest Service
California Region

CHAPTER VII PIONEERING - 1856-1870

Free Land

The history of California land development for two decades after the Golden Days of "Forty-Nine" cannot be thought of apart from the long, dangerous emigrant trails over which the lines of Conestoga wagons rolled westward from the Missouri to the land of gold and promise.

The steady stream of emigrants which followed the gold rush days, up to the time when the twin lines of steel of the Central Pacific firmly wedded the State to the balance of the great American empire, was composed mainly of the true pioneer type, the homebuilder, who, leaving the land of his birth, brought with him his family and possessions, to make a new start in the California of his dreams. These emigrants who followed the first mad, feverish rush, were permanent settlers, staking their all on a new home in the West, and not the adventurers and fortune hunters of the preceding era.

The long, rough, road across the Western plains and mountains was beset with danger every mile of the way, for the Indian tribes along the route, now fully aroused by mass invasion of their hunting grounds, fought savagely this encroachment on their domain. Organized trains, of from thirty to hundred of wagons each, worked their way west to the new lands under organized trail leadership and discipline, and few made the long trek without battle with the Indians along the way and the loss of life and livestock. Many wagon trains, composed of persons of all ages and both sexes, were wiped out to the last individual, the only record left of their passing being bleached skeletons and a circle of burned wagons. Some of these massacres never came to light till years later, when the Indian participants told of the last heroic stand of some emigrant party.

In spite of the hardships of the trail, American settlement of California progressed steadily. Settlers came by sea as well as by land. The preemption land law of 1841 which allowed any male citizen the right to 160 acres of unappropriated public domain gave individual families more than sufficient land on which to maintain a home in California's fertile valleys. This law, strangely enough, contained as one of its main provisions, a clause to the effect that Indian rights to the land must have been extinguished. It also definitely eliminated lands known to be mineral in character. The preemptor paid the government the minimum price set on such land which was

generally $1.25 per acre or less -- a low figure for California lands which half a century later were considered a bargain at $1,000 or more per acre.

The Homestead Law, best known of American land laws, was signed by President Lincoln in 1862. This law, giving free to each settler 160 acres of land, followed essentially the provisions of the Preemption Act, requiring residence, good faith on the part of the settler in the development of the land as a permanent home. This law also required that one-eighth of the 160-acre area be producing agricultural crops before final title was granted. A minimum of five years residence was required.

Many gold seekers, disappointed at not finding riches in the mining country of Central and Northern California, spread out over the State in the fifties, seeking new mineral deposits and opening up new settlements. Often, not finding mineral wealth, they turned to farming. These prospectors spread through the Sierra Nevada for its entire length, through the valleys on the east side of the range, along the Coast Range and through the mountain ranges of Southern California.

Gold deposits were found in many locations; in the Shasta and Siskiyou regions of the north, in the San Bernardino Mountains and near San Diego in the south; in Kern and Tulare counties and in the rugged hills of the Central Coast Region. Rich silver ledges were discovered on the eastern slopes of the Sierra Nevada in what are now Alpine, Mono and Inyo counties. While the mining development in all these sections produced precious metals in paying quantities and presaged the mineral wealth of California of later years, none of them approached in richness the gold caches dug from the grass roots by the early day miners in the Mother Lode country.

Mining operations, together with agricultural development of the surrounding lands in the fifties and sixties, were responsible for the founding of such permanent centers as Redding, Red Bluff, Chico, Nevada City, Grass Valley, Placerville, Sonora, Merced, Visalia and Bakersfield, up and down the Great Valley, or in the adjacent foothills.

Big Land Grants

It is quite true that the original promises of the American conquerors, ratified by the later Treaty of Guadalupe, assured the holders of Spanish and Mexican land grants safe and quiet possession of their land holdings, embracing as they did over twelve million acres of the best of the California lands.

However, it was quite contrary to the American way of land development to stand by and see such vast acreages of rich soil, in the best climate on the continent, lying comparatively idle in the hands of the large landowners.

Settlers coming to California, in their argument that God created these lands for human use and occupancy, had few scruples about establishing themselves on lands the title of which came from a foreign power. We have seen that titles granted under the Spanish and Mexican regimes were loose affairs, and many of the surveys were very much of a hit or miss proposition. The settlers in the new state squatted on these lands and claimed title to areas up to the amount to which they would be entitled under national land laws. They planted crops and otherwise prepared for permanent occupancy of their new homes.

The large landowners, in their native generosity and with almost limitless land holdings, were at first inclined to even give outright to some stray settler the apparently tiny fragment of earth he requested, but as more and more emigrants came in the ranchers naturally adopted an antagonistic attitude. Squatter wars, often involving bloodshed, occupied the center of the political and economic stage of California life for a generation.

Even before American occupation, glaring land frauds were perpetrated in California, often with the bribery and connivance of corrupt Mexican officials. After American conquest, many papers purporting to be Mexican land grants were brought into the Courts only to be proven forgeries. One of the most outstanding cases of fraudulent land claims was that involving the Jose Y. Limantour grants. This man was a French coastal trader who won the friendship of Governor Micheltorena during his commercial dealings with the Mexican-Californians. Limantour claimed that in 1841 and thereafter, for services rendered, Governor Micheltorena gave him various land grants amounting to 600,000 acres. He presented documents supporting his claims. Some of the lands claimed included such valuable territory as most of the area of San Francisco. Limantour's claims were proven fraudulent and the papers with which he sought to substantiate them clever forgeries. Judge Ogden Hoffman, who played a large part in running down fraudulent California land claims summed up the case with the statement, "The proofs of fraud are as conclusive and irresistible as the attempted fraud itself has been flagrant and audacious." Limantour fled to Mexico to escape arrest by American authorities.

There were many such claims of smaller calibre. However, it must be borne in mind that world rovers, robbers, murderers, and men who would be shunned by civilized society who sought to attain their own ends by fair means or foul, were prominent in California's early history. Land stealing flourished under the administration of unprincipled John H. McDougall, who succeeded Peter H. Burnett as California's second governor.

Following American occupation, shyster lawyers and land sharks, finding that the validity of the old Mexican land titles were often questionable, traded on this factor and encouraged trespass of squatters on lands on which the original grantee was living in perfectly good faith. An organized system of forging land grant papers, started by corrupt officials in Mexican times, was fostered and carried on to further extremes by newcomers of the same stripe. Edward M. Stanton, afterwards President Lincoln's famous Secretary of War, was sent to California in 1858 by the Attorney-General and uncovered evidence which led to a statement by that official to the effect that forged land grant papers covered real estate values of one hundred and fifty million dollars, even on the basis of the low rural land values of that time.

The Mexican-Californian rancheros as a class were scrupulously honest and were occupying their lands in good faith, according to their own natural interpretation of land use. Most of the settlers, or squatters, were honest and acting in good faith also, in accordance with their altogether different interpretation of land use. Another type of rural land owner of that time was the well-to-do American farmer and husbandman who emigrated to California and purchased outright part or all of the holdings of a Mexican grantee. All three of these types of land users suffered through the liberality and slackness of the old system of Spanish and Mexican land grants. A sample of the extremes to which the squatter-land grantee war was carried is that of the Sespe Rancho in Ventura County.

Carlos Louis Carrillo, born in Santa Barbara in 1783, took up the Sespe Rancho under a land grant in 1829. No exterior boundaries were fixed by the surveyors. A central point was established and a line ran six leagues north and south and six leagues east and west, in the form of a cross. The title was very vague and merely involved six square leagues of valley land, loosely described. Following the death of Carrillo, the land was sold in 1859 to Thomas W. Moore for $17,700. (The same lands are now worth many millions). Shortly after, squatters began coming in. Believing he had acquired the land by honest purchase, trouble developed as Moore resisted the efforts of the squatters to settle on the fertile lands of his rancho.

Moore was a great horse lover, and the squatters decided to hit him through his love of horseflesh. One night they set his barn afire and Moore did just what they expected -- rushed out to save his beloved horses. As he neared the barn he was shot down by one of the squatters concealed in nearby ambush. Lying on the ground badly wounded, in the light of his flaming barn, and with the agonized death screams of the horses in his ears, Moore begged for his life of the squatter who had rushed up and put a gun to his head. His pleas were in vain and the squatter fired the fatal shot. Although the case dragged through the courts for a long time, no one was ever convicted for the crime. One man who had turned state's evidence was enticed into a hotel room, plied with liquor by the defendants, and signed a statement repudiating the confession which had named the murderer and his associates.

It has been stated heretofore that every pre-American land title to California lands was challenged. Ultimately, even though heavy financial losses were suffered in many cases, this was probably the fairest method by which the tangled land grant titles could be straightened out and cases of fraud uncovered. The work was handled by a seven-man Board of Land Commissioners appointed following a special Act of Congress dated March 3, 1951. The Board was formally organized at San Francisco on December 8 of that year but did not start active operation until two months later.

It is doubtful if any Government Commission ever was charged with a more tremendous task in the entire history of land use in the United States. During the years the Board was in existence it investigated over 800 cases, involving title to something over twelve million acres of land. It ratified or approved over 500 claims, and rejected or disapproved around 275. A small number of claims were dismissed or the cases withdrawn by the claimants. Appeals from the decision of the Commission could be taken to the State courts and if necessary carried on up to the United States Supreme Court. The decisions of the Commission were, on the whole, fair and impartial, and on review seventy-five percent of its decisions were ratified by the higher authorities.

So thorough and painstaking was the work of the Land Commission that two years elapsed before final decision was reached on the first claims presented. In consideration of the claims, good faith in the occupancy and use of the land had often more weight than formal grant papers which were frequently sketchy, or perhaps had been lost entirely in the easy-going way of life of the rancheros.

Judge Ogden Hoffman, in his books dealing with the old California land grants, published in 1863, cites many instances showing the spirit of fairness of both the Land Commission and the Courts which later passed judgment on its decisions. These servants of the Government were evidently doing their utmost to make good the original pledges of property rights to the Mexican rancheros, whose rights to their lands were established more often by the testimony of witnesses than by actual title papers.

In the case of Thomas O. Larkin claiming part of the orchard of the Santa Clara Mission, it was asserted that, "The Governor had no power to grant in colonization, or sell for a money consideration, the orchards and like property of the Missions", and Larkin's claim was denied.

To protect such intensively-used small holdings left the Franciscan Order after secularization of the Missions, the Land Commission approved without question the claim of Archbishop Sodoc Alemany for small amounts of land at each of the twenty-one missions, besides allowing two large college grants, totalling almost 40,000 acres, in Santa Barbara and San Luis Obispo counties.

This land authority decreed that Cruz Cervantes had no equity in the Rancho San Joaquin when it said in part, "Where the condition of the grant ... requires a house to be built and the land to be cultiv ted within one year from its date and no house was built or cultivation made within six years ... claimant had no equity."

The Board decided in the case of Antonio Sunold, an Indian who claimed title to half a league of land in Santa Clara county, that, "Indians had a right to receive grants of land under the Mexican laws and to convey lands so granted", and Sunold got his rancho.

In the case of Joseph C. Palmer, et al, involving a claim for Rancho Punta de Lobas of two leagues in San Francisco county, the Commissioners set forth the policy, "The power of the Mexican Government to grant lands in California was unimpaired by the declaration of Congress that war existed, and the prosecution of that war by the Executives, and did not cease till the actual conquest of the country."

The work of the Land Commission was further complicated by the Mexican inheritance custom which left an undivided interest in land holdings to the legal heirs. The California rancheros

had large families, fifteen to twenty children in one family not being at all unusual. Such a case of disputed land ownership was that of the Rancho Santiago de Ana. The original grant consisted of 62,500 acres and was given by Governor Arrellaga to Jose Antonio Yorba in 1810. Title to a large portion of the rancho was confirmed to Bernardo Yorba, son of the original grantee, by the Land Commission in 1855. This particular case involved 19 plaintiffs and 119 defendants, all of whom had a family interest in the land.

Executors of the estate of W. E. P. Hartnell, based on grants actually made by Mexican governors, claimed eleven leagues of land in Sacramento county and five leagues, embracing the Todas San Antonio Rancho in Santa Barbara county, but the Commission's decision was, "Under the laws of Mexico more than eleven leagues of land could not be granted in colonization to any one person." The Hartnell heirs, therefore, had to be satisfied with the five-league grant in Santa Barbara county and six additional leagues of land in Sacramento County.

Judge Hoffman, in his volume of 1863, lists in detail the individual cases handled by the United States Land Commission and the Courts. Location of the lands involved ranged from Shasta to San Diego, with the greatest number of grants, large and small, located in Monterey County. Among the first of the patents issued was that to John Charles Fremont, whose name is so intimately connected with the American conquest of California. This embraced Las Mariposa Rancho in Mariposa County and covered 44,386 acres. General Fremont dabbled considerably in California real estate after the Conquest, as his name appears frequently on the old records in connection with land transactions.

Other cases, large and small, confirmed by the Commission and patent thereto issued by the United States included Maria Soledad and Ortega Arguello, for Los Pulgas Rancho in San Mateo county, 35,240 acres; William G. Dana, Nipomo Rancho in Santa Barbara county, 48,222 acres; Stephen Smith (pioneer lumberman of the Redwood Region), Blutcher Rancho, Sonoma county, 26,759 acres; Victor Luares, 1,000 varas square (approximately 173 acres) in San Luis Obispo county; Roland Galston, part of John A. Sutter's disapproved holdings in Sutter county, approximately 50,000 acr s; George C. Yount, La Jota Rancho, Napa county, 4,454 acres; (Thus this American pioneer reaped the General Mariano Vallejo's bounty of several decades previously by acquiring title to this comparatively small rancho). To Jose Ramond Malo went part of the former holdings of La Purisima Mission in Santa Barbara county, embracing 14,298

acres and to Manuel Antonio de Poli, 12 leagues of the fertile mission lands of San Buena Ventura in Ventura county.

Any detailed history of the use and development of lands of a single one of the larger ranchos would require a volume in itself but the following thumbnail sketch of the earliest and largest Spanish land grant, that of 300,000 acres, given by Governor Pedro Fages to Manuel Nieto in 1784, is representative of the loss of lands by the Mexican cattle barons to more modern ways of progress and development.

The immense San Rafael Rancho was later reduced to 150,000 acres and by government action the original land holdings of Nieto broken up to form the component parts of five separate ranchos, Cerritos, Coyotes, Alamitos, Bolsas and Palo Alto. Manuel Nieto originally stocked his large holdings with a comparatively small number of cattle and horses which, however, increased through the years so that at the time of his death in 1804, Don Nieto was reputed to be the wealthiest man in Spain's Alta California. In conjunction with his livestock business, he cultivated only about 160 acres of his vast land holdings. On his death, Nieto's lands passed, undivided, to his four children and were kept intact till 1833 when in a decision among heirs Governor Figueroa recreated six ranchos from the original Nieto grant.

In 1840 Los Alamitos Rancho of 28,000 acres was purchased by Abel Stearns for $6,000 payment being made in cattle. About the same time Don Juan Temple, a connection by marriage of the Nieto family, purchased the El Cerritos Rancho of 27,000 acres by paying $275.75 to each of the twelve children of Dona Manuela de Cota, deceased daughter of the original grantee. Temple in 1844 built an hacienda on the Cerritos property and that year pastured 15,000 head of cattle, 3,000 horses and 7,000 sheep. In 1855 the titles of Stearns and Temple to the two ranchos were confirmed by the U. S. Land Commission.

The Los Alamitos ranch lands were assessed in 1856 at $5,510, and this assessed valuation had risen to only $6,570 in 1861, at which time grazing lands in Southern California as a whole carried an average assessment value of 25 cents per acre. In 1866 Juan Temple sold his El Cerritos ranch, including his large herds of livestock, to Benjamin and Thomas Flint and Llewellan Bixby for $20,000, and sheep replaced cattle on the El Cerritos holdings. Abel Stearns, at that time probably the wealthiest landowner in California, weathered the floods and drouth of the 1862-65 period, although 50,000 head of cattle died as a result of drouth conditions on his Alamitos ranch

alone. It is said that in the sixties corn on these lands grew so high that a man standing on the seat of a spring wagon could not see over the tops of the stalks.

The Alamitos ranch was finally sold to John W. Bixby and like the El Cerritos became also sheep pasture. In 1880 Wm. E. Williams established a colony on 4,000 acres of the Alamitos ranch, in five, ten, twenty, and forty-acre farms, in effect founding the city of Long Beach. The breakup of the original rancho into small holdings was rapid after that time. A few decades later the hundreds of millions of dollars worth of oil wells and the modern city of Long Beach stood on the pasture lands of Los Alamitos Rancho. The lands included in the original Nieto grant, besides those embraced by the Alamitos ranch, are now occupied by thousands of acres of citrus groves and intensively used farm lands and several of the most populous urban centers of Southern California.

Most of the work of the U. S. Land Commission was carried on in San Francisco while a good many of the original Spanish and Mexican grants were located in Southern California. The assembling of witnesses, their transportation to and from San Francisco and maintenance while there during the hearing procedures, was a heavier financial burden than the more distant rancheros could carry and with the failing prices of cattle many were forced to mortgage their land and property holdings.

In 1859, a vigorous protest, signed by fifty of the large landowners of the south was sent to Washington. This protest to the central government called attention to the provisions of the Treaty of Guadalupe and set forth the cost of the verification of these land titles. It also cited the hardships being suffered by reason of squatter invasion of their land, the high rate of interest they were forced to pay on their loans, and aired other grievances. With the slavery question uppermost in the minds of the legislators and war impending, not much attention seems to have been paid by official Washington to the plight of the California stockmen.

Secession Moves

About this same time, a good deal of political unrest was apparent throughout the State generally. California, isolated from the nation's markets for its output of livestock, agriculture and timber crops and dependent upon lengthy ocean transportation for the disposal of its ever-increasing products, developed considerable leanings toward the establishment of an independent, separate republic. The mining

prosperity of the northern section of the State, in which the southern section shared only indirectly, also brought about the formation of a definite party having for its object the formation of two separate, independent states, Northern California and Southern California.

"Southern California", a popular term often jealously used by its residents applies to that portion of the State lying south of Tehachapi on a line roughly drawn east and west to a point just north of Point Conception, with the Pacific ocean as the west boundary and the Colorado River as the east. This division was the same in its geographic location and in the thinking of Californians of the 1850's as of the present day.

The latter fifties also marked the creation of a special state east of the Sierra Nevadas, in the extreme northeastern part of California. Peter Lassen and Isaac Roop, with their associates, founded the "State" of Nataqua, centering around Honey Lake Valley and embracing a material part of what is now Nevada. In this last-named revolutionary move, territorial officials were actually inaugurated and a standing volunteer army raised to defend the new commonwealth, although no actual fighting or bloodshed took place. These threatened secession moves died a natural death with the outbreak of the Civil War.

In the great war between the States, popular feeling in California was about equally divided between the Union and Confederate causes. Some rural newspapers openly espoused the Confederacy and at times considerable bitterness developed. Sixteen thousand Californians actually enlisted in the Union ranks and troops from California played a heroic part in keeping the transcontinental emigranttrails open and the Indian tribes in check along the route.

During Civil War days the agricultural population of California was even considerable augmented by many evaders of the national draft law moving west with their families to settle on the lands of California. Charges of cowardice can hardly be imputed to the emigrants of that time, since many of them bravely sacrificed their lives in the Indian fights of the period and all of them suffered the hardships incidental to pioneering. When President Grant's amnesty proclamation officially pardoned the so-called draft evaders several years after the close of the conflict, many prominent California pioneers appeared at the nearest Army post to secure the papers restoring their full citizenship rights.

Growth and Production

In 1850 the farming population of California was estimated to be less than three thousand, living on 872 farms or ranches, out of a total of almost 100,000 white residents of the State. By 1860 there was a farm population of 67,565 and 18,716 farms, the official population of the State being placed then at 379,994. By 1870 the farms had grown in number to 23,724, the rural population to 96,794 and the entire population of the State to 560,247. State census figures for 1856 show the population of California as 507,067, including 70,000 white families, but statisticians add that included in this population figure were 175,000 men between the ages of 18 and 45, the bulk of them bachelor miners.

The statisticians of 1856 were rather liberal in their estimates when they credited California with 41,622,000 acres of agricultural crop land, besides an estimated 30 million acres of grazing land and five million acres of swamp and overflowed lands, subject to reclamation. The best estimate they could make in 1856 of land fenced or otherwise protected for growing crops was 625,000 acres.

William Taylor, the missionary-statistician, in that year of 1856 gave the following reported acreages of cultivated grain cereals:

Wheat, 176,963 acres - Production, 3,979,032 Bushels
Barley, 154,674 acres - Production 4,669,678 Bushels
Oats, 137,602 acres - Production, 1,263,359 Bushels
Rye and other cerals, 59,724 acres,

The same authority states that there were 11,020 acres in Indian corn, 16,434 in potatoes and that reports from various counties indicated 14,703 acres planted to vegetables. He gives the average yields per acre as, wheat and barley, 30 bushels; oats, 33 bushels; rye, 30 bushels; buckwheat, 25 bushels; beans, 30 bushels; and peas, 28 bushels. Taylor states that a yield of barley in Santa Clara county, on the fifth crop from a single sowing, was 43 bushels per acre. He also numbers of livestock in the State as follows:

lists

Horses 159,991
Mules and Asses..... 30,641
Cattle of all ages .. 684,248
Sheep 253,312
Goats 4,554
Swine 6,585

and poultry to the number of 266,366.

In his report on California lands for the year 1856, the Reverend Taylor also mentions the abundance of wild life and the fact that over six million pounds of salmon were taken that year from the Sacramento River alone. He speaks of the "inexhaustible" supply of timber in the Sierra Nevadas and sets the annual lumber production at half a billion board feet. In speaking of the heavy production of wine and brandy, to the use of which he was opposed on moral grounds, this versatile clergyman states, "There are enough distilleries in the State to produce a stream of liquid fire sufficient in volume and venom to kill all the people in it, the producers included."

Transportation and Communication

It could not be expected that the progressive cosmopolitan population of California would long remain contented with the primitive means of communication and transportation which were satisfactory to the needs and desires of the Mexican rancheros. The old emigrants' trails entering California were merely roads in name, and in the middle fifties we find monster petitions, signed by thousands of Californians, going to Congress begging for appropriations for roads across the Western plains and over the Sierra Nevadas, to facilitate and speed up travel to and from their Western empire. Considering the great distances and the extreme difficulty of the terrain to be traversed, Federal appropriations appear quite niggardly, prior to the advent of the Central Pacific Railway in 1869. The new Californians were not slow, however, in carrying out their own development ideas with any means at hand.

One thing the native Californios could do well was ride horseback, so it was quite natural that their talent along this line would be utilized by the progressive-minded Americans. The American conquest had hardly materialized when a regular mail route was established between San Diego and San Francisco, serving intermediate way points. Using relays of horses, mail was delivered fortnightly between these centers in 1847. Later, the Postmaster-General entered into regular contracts for overland mail between the "States" and California, utilizing the various stage and freighting systems which had sprung up close on the heels of the great gold discovery, or had mail transported via the Panama route. Postage rate for letters on the overland route in 1858 was ten cents.

Roads were gradually constructed north and south through the State and into the mining regions of the Sierras, improving as time went on. The first of the famous Concord stage coaches

made their appearance in California in the early fifties, supplementing the horseback travel then in vogue. In 1857, besides large numbers of steamers plying the coastal and inland waters, California had 3,000 miles of stage lines within her borders. The swaggering stage drivers of early days, daredevils in piloting the lumbering Concords over narrow, steep, mountain roads, wrote a romantic chapter in the history of rural California. Wells Fargo and Company Express were early on the scene and as combination bankers and transportation agents, maintained depots in every town and rural center, their particular specialty being transportation of gold.

A wagon road across the Sierra Nevadas was completed in 1856 and regular stage and wagon freight service initiated by James Birch and Frank Stevens soon grew to large proportions.

On the overland route into Southern California the main traffic agency was the Butterfield Stage Company which commenced operations in 1858, running from St. Louis, Missouri and San Antonio, Texas to Los Angeles and on to San Francisco, eventually operating over 2800 miles of mail, stage and freight routes. By October 14, 1858, five mails had arrived at San Diego from San Antonio over this famous route, the first being 53 days in passage. The second mail arrived in 38 days and the fourth mail over the route in 30. The mail time was afterwards cut down to an average time of 27 days between the two points. The death of young James Birch, one of the State's pioneer transportation magnates, threw the greater volume of the overland traffic business into the hands of the Butterfield organization which was given a subsidy of $600,000 by the Federal government.

During favorable weather conditions, about the same time was consumed by the overland trip on the northern route as on the southern. The Sacramento Union of July 21, 1858, states that the first overland mail from St. Louis had arrived in Placerville two days previously with a travel time of 29 days. Wm. L. Ormsby of the New York Herald, that same year, made what is considered the record overland travel time of that period. Leaving New York on September 10, he arrived in San Francisco, via the overland route, on October 8. Since he had laid over three days en route, his actual travel time was 26 days. Ormsby, purposely seeking to set a speed record, travelled day and night. This trip was much publicized, both locally and in the Eastern newspapers.

Probably nothing in the history of mail transportation anywhere has taken on the glamour of the famous Pony Express.

The half million-odd people now forming the population of California insistently demanded faster communication to Eastern points, and were quite willing to pay for it. The Pony Express, which made its initial trip April 3, 1860, bridged the gap from that date till the coming of the transcontinental telegraph communication nineteen months later. In this new, fast mail service, time was counted in a matter of minutes. The first mail between St. Louis and San Francisco was transported in ten days -- just one third of the time required over regular mail routes.

San Francisco and other California centers wildly celebrated the inauguration of this new service. The time soon steadied down to eight days for the 1900 mile overland trip to and from the terminal of the westward moving telegraph line, and 13 days for straight letters to Eastern points.

For a half-ounce letter the Pony Express rate was $3 to Salt Lake City and $5 to points beyond. Seventy-five relay, or remount stations, were maintained along the route and the hardiest and fastest-moving horseflesh obtainable was used in the work. Horsemen of the lightly-built jockey type rode their horses at a dead run whenever the terrain and weather at all permitted. Horse and rider were stripped of every ounce of superfluous weight and the riders, often unarmed, depended upon the speed of their mounts to outdistance Indian attackers. The changing of rider and mail to a new mount at the way stations was a matter of seconds.

Sometimes the lonely remount stations, with their attendants and livestock, were completely wiped out by Indian raiders. Frequently mail carriers were killed by the arrows of the savages. Although extremely dramatic in its operation, the Pony Express, which contributed materially to the development of California and helped keep the new State alive in the public consciousness, was never a successful financial venture.

By the middle fifties, telegraph companies were in operation all through the mining sections and in 1860 a telegraph line was completed between San Francisco and Los Angeles. It was not till October 24, 1861 that the long expected transcontinental telegraph line was completed and on that date messages sent over it to President Lincoln by leading California State officials in celebration of the event.

Another somewhat spectacular transportation venture marked the period following California's gold rush days. Travel over the Sierra Nevada mountain passes was a desperate undertaking during the winter period of deep snows, necessitating ski travel for mail carriers and sometimes for months

prohibiting the use of wheeled vehicles entirely. On the other hand, the routes into Southern California, open the year around, meant traversing the long waterless stretches of the Colorado and Mojave Deserts.

Lieut. Edward F. Beale, United States Army Officer, who played a major role in the American conquest and who was familiar with the southern desert territory, conceived the idea of using camel trains much in the same manner as they had functioned in the Sahara region of North Africa for centuries. The project received Congressional support, and in 1856 76 of the animals were brought across the ocean from Tunisia and Algeria in two shiploads, the first train with the enthusiastic Beale in charge arriving in Los Angeles on November 18, 1857.

The rather costly project was a failure. The grotesque animals frightened mules and horses, and the horse-minded American teamsters practically laughed the camel desert trains out of existence. Beale never lost his enthusiasm for this mode of transportation and to prove the versatile possibilities of the camel in Southern California, once drove a team of them attached to a light sulky 160 miles from Ft. Tejon to Los Angeles. The animals were used to a limited extent for a year or two to carry messages between Army posts, but many died when allowed to wander off into the desert areas. When the War Department shortly afterwards offered the remnants of its "white elephant" camel herd for sale, Beale promptly purchased them and provided a home for them on his rancho in Tejon Valley.

Mining

A duplicate of the gold rush days of 1849-50 was experienced in California in the sixties, with the discovery and development of the riches of the Comstock Lode. While the history of the famous mining boom of Western Nevada and Virginia City belongs to our neighbor state, the central part of the California plateau region east of the Sierras shared a parallel development with that of the great Nevada mining region. The mining rush this time was mainly eastward from California over the great mountain range.

California capital figured largely in the new enterprise and products of California lands represented a large part of the Nevada imports. Fortunes which were gained in the mines of the Comstock Lode played a major part in the development of California during the following decades, with California names such as Sutro, Flood, O'Brien, Mills, and Hearst conspicuous in the Nevada mining region.

Meanwhile, in the California mining region itself, operations had settled down to organized quartz and hydraulic mining, to move the gold from the earth on a large scale. The underground mining, as lodes and veins were followed deep into the California hills, has proven a source of great wealth to the State up to the present day. Hydraulic mining, in which whole mountains were washed away by water pressure and which for many years threatened the agricultural existence of large areas in California, was not to be legally checked for many years to come. The "slickings" -- silt and debris which buried lower-lying orchards and farmlands -- were a land devastation problem even back in the middle fifties. Statisticians estimate that in 1856 there were 4,493 miles of water ditches in the State, used in hydraulic mining operations.

State Agricultural Society

The California State Agricultural Society was organized in 1854. Any California citizen could become a member and have a voice in its affairs for $5.00 a year, with sustaining, life and other memberships carrying a higher rate. Its purpose was to "advise, foster, organize and direct agricultural activities " in the State. Management was vested in 9 to 12 Directors, forming the State Board of Agriculture. The President and Directors were not salaried, but the Secretary and Treasurer were paid officers. The organization had full State recognition and was responsible directly to the Governor of California. One of its bigger functions was to sponsor and manage the annual State Fair.

The organization was handled on a State-wide basis until the seventies when it was broken up into districts responsible to the elected Board of Directors at Sacramento. By March 1891 there were 38 of these agricultural districts, and with the exception of a split in the area of Santa Cruz and Santa Barbara counties, the boundaries of the districts practically conformed to present day political subdivisions by counties.

The California State Agricultural Society, with its representatation from all parts of California, dominated the agricultural industry for several decades. They did good work in the encouragement of better breeding of livestock and poultry, better farming practices and in general, doing everything possible for better living conditions in rural California. While it was a mutual farmers association it functioned, in a sense, after the manner of a government agricultural bureau somewhat along the lines of the Agricultural Extension Service of the present time.

The bulk of the exhibits at the first State fairs held at Sacramento under the auspices of the State Agricultural Society came from the central and north coast and not the interior valley regions. Southern California did not contribute materially to the great annual land production exhibition for several years. Gradually, however, and mainly through the medium of horse racing, the counties south of Tehachapi and in the southern coastal plain began to stand out prominently in the annual display.

By 1870 the State Fair had assumed large proportions and became an annual clearing house for progressive agricultural ideas and improved land use practices. Exhibits included not only California livestock, poultry, field and orchard crops, and products of the mine and forest, but local industrial and aesthetic products also, ranging from tombstones and machinery, to paintings and musical instruments. Horse racing was always the main central attraction. The old reports of the State Agricultural Society give a lot of detail on new crops, changing trends in land use, and many factors affecting rural living conditions. These annual reports were the forerunner of the present day California Blue Book.

Although this was shortly following the Great Drouth, the Society gives the livestock owned in California in 1867 as 185,000 horses and colts; 17,000 mules and mule colts; 820,000 cattle, including 140,000 milk cows; 3,250,000 sheep and lambs, and 840,000 hogs. Figures for that year show clearly the trend from cattle to the wheat which was to head California's crop production during the next two decades. They indicate an average acreage for the years 1865-69 of 1,075,000 acres of wheat and 362,000 acres of barley. During the sixties, particularly in the agricultural sections of the Mother Lode country, dairying had taken a leading place in farming operations. The dairy farms were known as "milk ranches", a term still in use in the mountain valleys at the present time.

Chinese

When the news of the great California gold discovery flashed around the world, the people of Japan were not in any way tempted by the siren call. To the teeming millions of China, however, the new gold fields offered an opportunity to strengthen their centuries of culture with material possessions. While there is no record of Japanese in California in pioneer days, the smock-clad, pigtailed Chinaman was a familiar figure. China had been trading with the California coast before the first gold rush years but, outside of an occasional ship's steward or cook, no member of the race had visited the State.

The first record of Chinese settlers in California is that of two men and one woman brought over from Hong Kong by Chas. V. Gillespie in the brig Eagle on February 2, 1848. Hubert Hoowe Bancroft is authority for the statement that there were 54 Chinese residents in the State on February 1, 1849; 791 a year later, and over 4,000 by December 31, 1850 , mostly miners. Chinese miners, satisfied with simpler living conditions and smaller financial gains than the Americans, often worked "the diggin's" after the latter had moved out. In many cases they worked alongside the white miners in working gangs of their own. Although peace-loving and tending strictly to their own affairs, they were an unpopular element with the whites, and were often very much mistreated.

Historians state that there were 25,000 Chinese, mostly in the mining regions, in California by 1852 and a letter to a local newspaper the following year calls attention to a growing Oriental menace by the influx of these people to the State, mentioning the fact that in some mining camps the Chinese miners outnumbered the whites.

The much publicized tong wars of the Chinese were confined mainly to the metropolitan areas, but the battle of the Orientals at Weaverville in Trinity County in 1852 is one of the famous stories of the pioneer gold mining days. Two rival Chinese factions, involving some 800 miners, each vowing a war of extermination on the other, spent weeks preparing for battle. They manufactured swords, spears and other sorts of lethal weapons, except firearms. Possession and use of firearms by the Chinese was forbidden at this time. On the date set for the great contest the hundreds of Chinese miners gathered into opposing forces, cheered on by white citizens sitting on the side lines as spectators. A great deal of noise, verbal threats and clashing of weapons ensued, but the fight finally narrowed down to two opponents who engaged in a hand to hand fight to the death. There were no other casualties and both factions retired from the field. The results of the mass duel seemed to satisfy the Oriental code of honor.

In spite of the bitter feeling against them, the Chinese on the whole were peaceful and law-abiding, and if forced from one mining camp, drifted into another or took up other occupations. They proved a blessing in disguise when 2,000 of them were gathered from the mining regions and put to work in the spring of 1865 as laborers on the Central Pacific Railway, building eastward from California to meet the crews working west. Here they gave such a good account of themselves

as railroad construction laboers that by the end of that year 6,000 of them were laying steel on the new railroad.

When railroad construction was nearing completion there was a maximum of 15,000 Chinese coolies employed on the western sector of the road. They were credited with once laying ten miles of track in a single day, a feat not yet duplicated. Their ever-increasing numbers and the troubles brought about by their cheap labor in competition with white employment, eventually led to the passage of the Chinese Exclusion Act of the 1880's, which practically stopped all further Chinese immigration to California.

Considerable rioting and bloodshed marked the three decades of what might be called the Chinese Labor War, and the Chinese question was a red hot political issue during this period. However, it is to the credit of the Chinese that they never made any organized resistance against their white persecutors. They invariably were trustworthy and faithful employees, and met such restrictions as were imposed upon them by law or popular feeling with the blandness of their race. They played well their impassive part in the development of California lands.

Weather, Lands and Livestock

The heaviest rainfall in 75 years up to that time hit California in the winter of 1861-62, flood conditions assuming disastrous proportions, particularly in Southern California. Exact figures are not obtainable on the losses from this flood, but Historian Robert Glass Cleland estimates that around 200,000 head of cattle were lost in the entire State. The towns of Santa Barbara and Ventura were almost washed away by the flood waters coming down from the hills; the Great Central Valley became an inland sea 250 to 300 miles long and 20 to 60 miles wide; orchards and vineyards were washed out of the ground; the typical California adobe houses melted away under the torrential outpour, and the city of Sacramento, later to suffer again and again from the same cause, was practically under water for many weeks. It is estimated that this flood destroyed one-fourth of the State's taxable property.

As though Nature was trying to do her worst, this unprecedented volume of water was followed by the worst period of drouth California has ever experienced. After the first month of that year, no rain fell over the most of California during 1862, and 1863 was little better, as the expected winter

rains failed to materialize. Drouth conditions continued into 1864. The ranges became dust beds, water holes never before known to fail dried up, and cattle died by the thousands. It is said of that time that one could travel for miles through California without once escaping the odor of rotting cattle carcasses.

This drouth was the death blow to many of the Mexican-California cattlemen. Taxes, usurious rates of interest, low prices by reason of dumping cattle on glutted markets, prevailing low land values, encroachment of squatters and fencing of range lands forced many of them out of business. One authority reports a sale in Santa Barbara county during the drouth period of 1863-64 of 5,000 head of cattle at 37½ cents per head.

Loans such as that made by Abel Stearns to Joaquin Ruiz in the middle fifties were not at all uncommon. The loan for $400 bore an interest rate of 5 percent a month and Ruiz gave Stearns a mortgage on his 6,600-acre rancho. In 1861 Julio Verdugo mortgaged 36,000 acres of the great Rancho San Rafael to secure a loan of $3,444.37 covering a pressing, current debt. Eight years later, this debt, with its interst accumulations, had grown to $58,750 and Verdugo was landless. American speculators picked up immense areas of land for a mere song and loans carried interest rates as high as seven percent a month, as the rancheros struggled desperately to maintain their traditional way of living.

Some of the Southern California land prices of those days now seem ridiculous. Old official records in the southern counties bristle with the names of Mexican landowners mortgaging their holdings or selling out for a mere pittance. On these records the lenders or purchasers are represented mainly by Anglo-Saxon names, and wereoften squatters seeking to legalize their titles on the Spanish or Mexican land grant holdings. The squatters had much the best of the deal, and generally solid official backing, since theirs was the voting strength. Some of the records show settlers' affidavits to the effect that they had entered and taken possession of 160 acres of land under the preemption law, although such lands were obviously the subject of an earlier, yet unsettled, Mexican land grant.

Jose Maria Covarrubias, leading Mexican-Californian official and landowner of his time, sold one half of one of Pio Pico's grants, and one-half of the San Carlos Rancho in Santa Barbara County for $3,500, the transaction including "all the black cattle" found on the large acreage involved. This same Mexican pioneer sold all of Catalina Island at one time for $7,000.

La Ballona Rancho, now covered by Culver City, was sold for $2,000. Some 2,200 acres of the Centinela Rancho, where Inglewood is now located, was sold at a sheriff's sale for $2,000, but the purchaser's pressing debts forced him to re-sell the property for $900.

Forty-five hundred acres of land now covered by the palatial residences of movie stars in the city of Beverly Hills, brought a price of only $800, of which $500 was paid in cash and the balance by a long term, unsecured note. Some American purchasers, buying lands at sheriff sales, to compensate somewhat for the low prices, deeded back some portions of the land to the families of the original ranchero owners.

During the sixties while prices of lands in urban areas such as San Francisco soared, low prices for rural lands continued, Theodore H. Hittle, in his History of California, is authority for the statement that the highest farmland prices paid in California for rancho lands during the period 1850 to 1865 was $1,000 per square league, or less than 25 cents an acre and that a great deal of the lands changed hands for as low as ten cents an acre.

That Hittel's figures are approximately correct, is verified by U. S. census reports. These reports indicate that as late as 1870 the land included in 23,724 California farms then in existence, with an average land holding of 466 acres, was valued at $141,240,028. The area in these farms totalled 8,730,034 acres, of which 2,468,034 acres were classified as "Improved", and 6,262,000 acres as "Unimproved."

We find in 1868, however, that Abel Stearns, seeking to recover from his tremendous livestock losses of the preceding drouth years, formed an organization with five associates and sold over 275,000 acres of his large land holdings in small parcels at a price of $2.00 to $6.00 per acre. This combination of California capitalists staged an advertising campaign reaching international proportions and the transaction involved the most fertile lands of Southern California's Coastal Plain. It is reputed that each member of the so-called Land Trust eventually cleaned up a round two million dollars from these and following land sales.

All of the rural residents of California, most of them newcomers, learned lessons from the Great Drouth period. A great many of the native California black cattle fell victims to the long dry spell, and the State Agricultural Society was constantly spreading its gospel of better livestock breeding

practices. Thus six years after the bad drouth period, a survey shows the livestock in the State, while it showed only a total of 815,000 grown cattle on the assessment rolls, classified them as follows:

250,000 American Stock, assessed at $18.00 per head
425,000 Seven-eights American Stock, assessed at $10.39 per head.
110,000 Three fourths American Stock assessed at $9.49 per head.
29,000 Unmixed or Spanish Cattle, assessed at $8.00 per head.
1,000 Thoroughbred Cattle, assessed at $57.00 per head.

The Great Drouth also brought into the State consciousness some realization of the values of the great Mountain and Plateau Region. During the drouth, livestock herds, driven to the wild pasture lands of the high Sierra Nevadas, were saved from perishing with their kind at the lower-lying elevations, and their owners from bankruptcy. Looking somewhat ahead, the following is quoted from the opening page of the official report of the State Agricultural Society for 1870-71 to Governor Newton Booth:

> "These occasional seasons of drought in California are not without valuable lessons, they are accompanied with benefits as well as disadvantages. In eighteen hundred and sixty-three and eighteen hundred and sixty-four the general failure of crops throughout all the central portions of the State, and the scarcity of grazing and hay for stock, directed attention to the low land constituting the deltas of our great rivers and also to the tablelands located well up on the Coast Range, and the Sierra Nevada Mountains. Those who explored in the latter direction found to their surprise and gratification an abundance of the most nutritive grasses, sufficient to feed all the stock in California during the entire season. They found there countless valleys waving with excellent bunch grass, and extensive green meadows, furnishing nutritious and plentiful grazing for their flocks and herds, ranging almost to the very summit of the highest Sierras. These extensive high tablelands have been the resort of thousands of cattle and sheep every summer since that date, and have been the most valuable addition to the stock raising resources of the State."

Mountain Valleys

During the 1860's emigration turned to the little-known hinterlands of California -- the numerous large and small valleys tucked away among the mountain ranges of the State and containing, in the aggregate, hundreds of thousands of acres of fertile farm lands. As late as 1892, the State Board of Horticulture, in its annual report to the Governor, as required by law, stated: "Besides the great valleys of Californi the Sacramento and San Joaquin, there are almost innumerable valleys of smaller size in both the Coast and Sierra Nevada Ranges." The Board evidently used the word "innumerable" in a literal sense, since in their further remarks they became somewhat confused in an attempt to describe these valleys.

As an illustration, one of these is Surprise Valley, located first in Siskiyou county and later, as at present in Modoc county. This extremely fertile valley, 60 miles in length north and south and 3 to 6 miles wide, embraces more than 100,000 acres of arable farm lands. Its west side snuggling against the abrupt slopes of the Warner Range -- a rugged offshoot of the main Sierra Nevadas -- its east side extends to the rolling, desert hills of Western Nevada, and the entire area lies at an elevation of over 4500 feet. The climate of the valley closely resembles that of the Mid-western states, with four distinct seasons. The westward-rolling emigrants were responsible for the name, since its broad, fertile acres were a real "surprise" to these pioneers after weeks of traversing the desert-like sagebrush lands to the east.

Teeming with wild game, the valley was found by the pioneers to be well-watered and covered with waving fields of succulent native bunch grass, in the popular description of the time, "saddle high." Surprise Valley was a great hunting ground for the Indians, and so turbulent was their nature that no settlement was made in the valley till 1864, by which time military occupation of the surrounding lands had somewhat paved the way for farming settlement. Although one of the most isolated areas of the State, fortunes in livestock raising were made during the following decades. The towering protecting bulk of the Warner Mts. also created a climate favorable for the production of vegetables and the hardier fruits. In later years Surprise Valley alfalfa seed commanded a premium in the national markets.

Other valleys of somewhat similar nature, almost untouched by the miners of gold rush days and settled first during the late sixties included Goose Lake, Pit River and Round Valleys,

in the same county; Big Valley, in Lassen and Modoc counties, Fall River Valley in Shasta county and Tule Lake Valley in California and Oregon.

This northeastern corner of the State and of the Plateau Region was settled mostly by pioneers from the Middle West and by settlers, who had traversed it on their original western migration, returning later from older settled California and Oregon points. In this region Indian troubles continued well into the seventies as the Pauite, Shoshone, Pit and Modoc tribes fought desperately to save their hunting grounds from the white settlers' invasion.

These valleys of the California hinterlands were very much self-contained communities. All luxuries of civilized life had to be hauled over hundreds of miles of rough mountain roads from the older settled regions of the State. Sometimes these roads were little more than mere trails constructed by the military forces occupying the surrounding region. Livestock, capable of reaching market on the hoof, was the only product which brought in outside revenue.

Field, garden and fruit crops for local consumption were raised on the farmer's own lands. Curative and preventive medicines took the form of wild native or home grown herbs; each farmer was a combination cobbler, saddler, blacksmith, carpenter, and wheelwright; light came from homemade candles; homespun cloth was fashioned into clothing by the tireless hands of the women and in general, the pioneers of these isolated areas lived off the lands they had settled, somewhat akin to the Indian tribes from whom they had wrested them.

Small urban centers sprang up, with amazing rapidity, the nucleous usually being the postoffice to handle the infrequent mail, a general trading post or store of sorts, the local school and meeting-house, the blacksmith shop, perhaps a grist mill and sometimes the frontier saloon. A sawmill, located in the nearest timber belt, invariably followed close on the heels of agricultural development.

Timber

Up to the days of the gold rush little attention was paid to the timbered regions of the State and all the lumber manufactured came from the redwood forests of the Central and North Coast Regions where, as has been recorded, a number of small logging operations were carried on during the 1840's.

It was the construction of John A. Sutter's sawmill in Coloma Valley which brought about the great gold discovery. That particular sawmill was never finished, although it was one of the pet projects of the Swiss-American pioneer. After the influx of miners and the subsequent rapid increase in population and building activities, it was inevitable that the newcomers would turn to the Sierra Nevada pine region for their timber supplies. Many small sawmills came into existence up and down the Sierra Range during the 1850-1870 period, engaging in the manufacture of lumber for local use. Mills were turning out Sugar Pine and Yellow (Ponderosa) Pine lumber in the fifties in Butte, Yuba, Nevada, Sierra, Tuolumne, Plumas, and Trinity counties.

These early sawmills, many of them crude affairs, were operated both by water power and steam, usually the former. One enterprising operator during the early mining period powered his small sawmill with an engine taken from a wrecked ocean steamer and hauled by slow stages from the sea to the mountains.

The only body of merchantable timber of any consequence in Southern California is located in the rugged San Bernardino Mts. and the Mormons established a sawmill there shortly after founding their colony in the nearby valley, dragging their finished product down the steep slopes by ox teams.

The beautifully-grained, easily-worked pine timber of the Sierra Nevadas gained rapidly in popularity. Official statistics of 1869 give the lumber cut for that year from timber other than redwood as 319 million board feet, two-thirds being the Sugar and Ponderosa pines, the balance consisting of Douglas Fir and other species. Because of its nearness to water transportation, the redwood region continued to furnish a large percentage of California's lumber needs and around sixty million board feet of this species was produced by the mills of Mendocino and Humboldt counties in the year 1860. That same year the census figures show a total of 279 sawmills in California with a capital investment of $1,923,000 which proves that many of these mills were small affairs. The same authority states that in 1860 these 279 mills employed 1,870 hands and produced $3,944,000 worth of lumber, shingles, and kindred products.

One of the earliest lumbering operations of any magnitude was that of the Weatherly-Company in Mendocino county which shipped its redwood lumber by schooner to the San Francisco market. Established in 1851, the operations of this pioneer concern involved ten miles of logging railroad and their mill

was run by water power furnished by the rise and fall of the tides.

By 1860 there were around a dozen steam sawmills operating in the Humboldt Bay area, shipping their product not only to the local market, but also exporting redwood lumber to Australia and the Orient. One of the commonest items of redwood production for local use and export was barrel staves. Lumbermen of the late 1850's estimated the redwood timber stand in the Northern Coastal Region at fifty billion board feet, a figure not so far off later estimates secured by formal survey.

The Railroad Arrives

In 1846 when the subject of a transcontinental railroad to California was first broached, the project was, by most authorities, considered entirely impossible, mainly because of the barrier presented by the Sierra Nevada Mountain Range. The actual reality of the great railroad project crystallized in the brain of Theodore D. Judah, who came to California in 1854 to construct California's first railroad line, a 22-mile stretch between Sacramento and Folsom. Commissioned by the State authorities to survey and make plans for the wagon road which was later constructed across the Sierras, Judah spent months in mountains, proving to himself and later converting others to the idea that the railroad project was actually possible.

The Great Pacific Railroad, as it was then called, became Judah's obsession, and for years he divided his time between investigation of the most feasible route through California, and with congressional and financial committees in Washington and California who were interested in the project.

Judah, as chief engineer of the organization which came into existence as a result of his efforts, was responsible for the birth of the Central Pacific Railway, later called the Southern Pacific. Although Judah died while yet a young man from a fever contracted in connection with his beloved project, he had the satisfaction of seeing ground broken for the Railway by Governor Leland Stanford at Sacramento on February 22, 1863.

After Judah's death the main control of the venture passed into the hands of four California capitalists, Leland Stanford, Charles Crocker, Collis P. Huntington, and Mark Hopkins. All of these names are closely interwoven into the history of California development. Although history charges the four leaders with high financing and excessive monopoly, and all

became immensely wealthy men, they encountered and overcame the most difficult task in railroad construction ever met. A rise of 7,000 feet in elevation in twenty miles, towering precipices of solid granite, almost impassable chasms, and adverse weather conditions, at times baffled the most expert engineering talent.

The financial reward of the pioneer railroad builders was great, however, for not only did the Federal government come to the aid of the railroad company with handsome cash subsidies, but also gave it outright twenty-one sections of land, comprising the odd-numbered sections within ten miles of their right-of-way (or 13,440 acres) for each mile of track laid. This gift of land to railroads became an established government policy in California. While it meant building up the wealth of the railroads, returns later accrued to the public purse in the way of elimination of freight charges on Government shipments, transportation of mails and other special reservations. Right-of-way documents for these land grant railroads contained the wording, "To secure the safe and speedy transportation of mails, troops and munitions of war and public stores."

For six years railroad construction crews struggled to overcome the high rampart of the Sierra Nevadas. Labor troubles early developed and the more amenable Chinese laborers were employed by the thousands in the construction work. Difficulties piled up in the path of the railroad builders. Sometimes there was a shortage of ready cash to meet current expenses; in some places it was necessary to suspend the Oriental laborers by ropes over dizzy cliffs, to chip away a road bed from the solid granit walls. Transportation of supplies was tied up by heavy winter snows, when locomotives, rails and supplies were hauled on immense sleds to the points where needed. Something new in the way of railroad construction was added when the problem of thirty foot snowdrifts covering the right-of-way was overcome by the construction of over thirty-five miles of snowsheds, to completely house the track.

A new era was born for California when on April 28, 1869, at Promontory Point, Utah, amid a grand celebration on the open prairie, engines from the East and West touched cowcatchers and the transcontinental railroad dream of the pioneers had become a reality. This climaxed the famed feat of laying ten miles of track in one day. Exactly one century had elapsed since Portola's first colonizing expedition had reached California's soil and American ingenuity and energy, in less than a quarter of a century of occupation, had conquered with mechanical transportation the great mountain barrier which had defied even the horsemanship of the Spanish conquistafores. The twin lines of steel, with their accompanying line

of telegraph communications, tied the California commonwealth solidly to the rest of the United States, and followed in a general way the tracks of the gold miners and Conestoga wagon pioneers.

1870 California

Due to the tangled land titles inherited from Mexican times, public land surveys were vigorously pushed during the sixties, although Spanish and Mexican land grants were covered by the metes and bounds, survey system, rather than by the American standard 6-mile square township of 36 sections. The total area of these pre-American grants confirmed by the U. S. Land Commission and approved by the Courts, amounted to a total of 6,030,814 acres by July 1, 1868. The final approved total covered by these old grants, when all had been settled, reached 8,383,375 acres, located mostly in the Coastal regions.

There were several ways in which the incoming settler of the sixties could secure title to lands of farm unit size, in addition to the purchase from private owners at the low land prices then prevailing. Besides Federal lands available under the Preemption Act of 1841 and the Homestead Law of 1862, with their liberal allowances for military service, the State itself had a large volume of land for disposal and settlement.

The Act of Congress of March 3, 1853, had given to the State of California all public lands in Sections 16 and 36, (in common land phraseology known as "School Sections") in each township, surveyed and un-surveyed approximately five and a half percent of the total land area with the additional privilege of selecting lands in lieu thereof.

The Swamp and Overflow Act was extended to cover California lands on July 23, 1866. By this latter act the State eventually acquired an additional area of almost two and a quarter million acres. In 1870 mineral lands were still held under the "home-made" mining laws of the time, based on occupancy and use -- and there were no absentee landowners in the mining sections.

Up to the sixties, the bulk of the oil used in California for lubrication and other purposes was furnished by the whaling industry which maintained headquarters and refining stations at various points along the coast, from San Diego to the Oregon Line.

Oil seepages from the earth were well known to the Indians who used the exuding product to caulk their canoes and cooking baskets. Prospectors, searching for precious metals, brought California oil deposits into the limelight in the latter fifties and some spasmodic attempts were made along the Santa Barbara coast and in other localities to distill oil from the surface oozes.

Drilling operations in the Pennsylvania oil fields prompted some exploitation in various parts of California in the middle sixties and wells were sunk to a depth of as much as 200 feet in Santa Barbara and Ventura counties, with rather indifferent success. A tunnel, driven into a hillside in the present Ventura oil field, yielded a heavy flow and marked the beginning of the oil industry in that area.

Geologists of that time, who ventured the opinion that these oil discoveries held great future commercial promise, were more or less laughed at. Newspapers of the State pretty much ridiculed the value of California's future "black gold" and the general public opinion was pretty well expressed by one expert who had taken a fling at oil well development in Southern California. Writing a lengthy report on the embryo oil industry, he broadcast the announcement: "As a question of financial importance to the State at large, the petroleum interests of this State can never amount to anything." This investigator cannot be criticized too severely, since a lot of similar statements made at that period and during the next three decades relative to California land use were equally far from the mark.

From statistics published in 1868, up to June 30 of that year, the Federal Government had disposed of 16,409,422 acres of public lands in the following ways:

Patented, or approved for patent, to private owners on the basis of lands covered by Spanish and Mexican Land Grants, (With two million acres yet in litigation)	6,030,814	acres
Grants to State for Internal Improvements ..	500,000	"
School lands to State, (Sections 16 and 36).....	6,766,309	"
Donated to State for public buildings	6,400	"
Declared to State to date under Swamp and Overflow Act.....	343,169	"
Taken up under the Homestead Law	368,321	"
Sold under Preemption Act	1,198,874	"
Taken up under Scrip.....	580,572	"
Taken up under military warrants.....	470,452	"
Cleared to railroads up to June 30, 1868 ..	116,382	"
Taken up under Indian Scrip	28,129	"

Making a liberal allowance for ratification of the old land grants, confirmation of railroad grants, assignment of the balance of proven swamp and overflow lands to the State, and mineral lands held under the squatter rights of the time with a view of permanent occupancy, at the end of 1870, approximately 70 million acres, or 70 percent, of California lands were still vested in Federalownership. Figures on the volume of land held by agricultural squatters under unperfected ownership title are not obtainable, but this would not change materially.

The agricultural census of 1870 showed that California had 4,564,064 acres inclosed in farms and that 2,468,034 acres of this was under cultivation. The word "inclosed" did not probably involve fencing of much magnitude. Lumber for fencing was high. Barbed wire, which was to play its part in the transition of rural California from cattle raising to field crops, was not patented till 1864, nor placed on the market in appreciable quantities until ten years later. Some inclosures were created by deep ditches, at times filled with water, while the low adobe walls, topped with cattle skulls, were yet a feature of the California landscape.

California by 1870 had 49 counties and her total population was officially placed at 560,000 although the area south of Tehachapi, or Southern California, is credited that year with only 42,000 people. The number of farm units had grown in two decades from 872 to 23,724, but the acreage in the average farm had jumped from 466 in 1860 to 482 in 1870. The assessed valuation of the State showed $277,538,000 for real estate and $108,001,588 for personal property. Besides lands already formally granted, there were 1,384,000 acres in railroad grant claims in the process of clearance and the tentative area of railroad land claims, all told, amounted to 10,424,000 acres.

California in 1870 had 73 steam and 70 water power grist mills. Twelve of these were located in industrial San Francisco county. That year these grist mills ground 2,248,758 bushels of wheat and corn. There were 226 steam and 117 water power sawmills, ranging from two-man, one-team affairs, to fairly large manufacturing plants. These sawmills cut 271,446,000 board feet of lumber and 240,825,000 shingles. In 1870 the State is credited with having 308 quartz mills and 516 miles of mining ditches in use. Reports indicate also the use of 915 miles of irrigating ditches which irrigated 90,344 acres, and mention the fact that 180 miles of these irrigating ditches were located in Siskiyou county, in the far north, and 110 miles in the Southern San Joaquin Valley.

The State Agricultural Society furnishes the following California agricultural figures for the year 1870:

Number of sheep	2,975,753
" " goats	13,589
" " hogs	400,830
" " chickens	1,394,975
" " turkeys	139,923
" " geese	33,928
" " ducks	54,524
Number of hives of bees	28,854
Gallons of wine produced	2,636,558
Gallons of brandy produced	161,015
Number of horses	241,146
" " mules	26,284
" " asses	1,866
" " cows and calves	416,217
" " beef cattle	300,367
" " oxen	11,345

It is interesting to note from these old figures that Los Angeles, up to about this period known as the "Queen of the Cow Counties", is credited with having fifteen percent of the total sheep in California, or a listed number of 437,000 head.

With ranchero debts, influx of settlers, building up of urban centers, planting of fruit and field crops, and the increase in the number of sheep, it is generally conceded that what is known as the"pastoral era" of California ended in 1870. In that year, good pasture land, which was also agricultural in character, rose to a price of from 75 cents to $6.00 per acre. Although the colorful rancho days were over, California still continued to be a great cattle state and land, and cattle barons held sway as major land users for several decades following.

The 1856-1870 period of California history marked the laying of the foundation of her great agricultural development, and the discovery of the first of her immense oil deposits. It witnessed the conversion of rural life from the hectic existence of the Argonauts to the more prosaic struggles of pioneer existence on new lands and the start of the rail transportation which was to contribute so much to the State's development.

Crops and Trees

The California State Agricultural Society, in its report of 1871, gives the following figures covering the State's production of field crops for the year 1870, based on reports from all of the 49 counties then in existence:

Product	Acres	Volume
Wheat	1,263,010	19,041,490 bushels
Barley	471,785	9,045,225 "
Oats	80,809	1,458,602 "
Rye	2,340	44,298 "
Corn	48,321	1,497,592 "
Buckwheat	367	7,041 "
Peas	3,200	121,377 "
Peanuts	228	218,760 "
Beans	14,870	374,546 "
Castor Beans	237	150,180 "
Potatoes	30,407	3,161,356 "
Sweet Potatoes	1,172	134,699 "
Onions	3,131	240,496 "
Hay	346,362	443,052 tons
Flax	1,612	451,719 pounds
Hops	841	672,329 "
Tobacco	123	94,230 "

Wool exported that year amounted to 21,872,660 pounds, with a value of $2,370,165.

The early reports of the State Agricultural Society are liberally mixed with flowery speeches and considerable poetry. Parts of the Society's report of 1871 have a familiar ring during the war years of the 1940's. Decrying the improvidence of large livestock and grain farmers in their one-crop method of farming, it urges the establishment of orchards and farm gardens by ranchers who purchase their entire living needs from the nearest urban centers. Officers of the agricultural society recommended that this farm garden spot be located near the house with advice that such a location would utilize "many leisure moments of the farmer himself and of the boys, and hired labor that would otherwise be lost."

In 1871 this dominant agricultural agency aired the multitude of land use problems with which rural California was then

faced. Transition of the major agricultural land use from cattle to wheat; the accomplished fact of a transcontinental railroad having opened up new markets for bulky agricultural products; the necessity for better livestock breeding; the need for greater versatility in farming operations; the necessity of guarding against drouth years by the construction of more irrigation projects, and assured water rights for farmers; new settlers for the large areas of public land yet available; large land holdings; land speculation, and many similar matters were touched upon in the report of that year's proceedings.

The Society deplored the still remaining large numbers of the Mexican black cattle, with their high hips, long horns and small bodies, and was waging a campaign for their replacement with better stock. Under the heading "Land Monopolies," it called attention to the large land holdings, citing the fact that in a survey of eleven counties, embracing Colusa, Tehama, Butte, Monterey, San Luis Obispo, Santa Barbara, San Diego, Kern, Fresno, Merced and San Joaquin - "One hundred proprietorships owned and controlled 5,465,206 acres, or an average of 54,652 acres each."

In a formal speech to the members of the California State Agricultural Society at their annual meeting on September 22, 1871, T. C. Phelps, one of the State leaders, speculated on the distribution of California's population as follows:

"One-fourth of the population of the State today resides in the city of San Francisco, and one-fourth of the balance in the six or seven next largest cities of the State. Rural life is fast losing its charm for our people...This is to be greatly regretted....A busy, thriving country population may maintain large cities in the exchange of its products, but large cities can never maintain the country. Cities, as a rule, absorb more of the wealth than they create."

The report of the Society that same year mentioned the scarcity of timber in many parts of the State and says in part:

"California naturally was but a poorly timbered country and the limited natural forests within her borders have been most recklessly and uselessly destroyed. While it is one of the first duties of the State to check this reckless destruction of the natural forests it is a matter of no less importance to encourage and foster the growth and cultivation of artificial forests."

A great deal of attention was, indeed, being paid to artificial tree propagation in the treeless areas of the State by the Society's State Board of Agriculture and we find them stimulating tree planting efforts of farmers with an offer of a medal and a $50 cash prize to the land owner planting the greatest number of what the board phrased as "valuable forest trees". The prize winner was E.T. Aiken of Sacramento county who planted 32,000 trees, including Lombardy Poplar, American White Elm, California Black Walnut, English Elm, and some varieties of the chestnut species. James T. Stratton was adjudged a close second when he reported the planting in 1870 on 53 acres of land, of 30,000 Glue Gum, (Eucalyptus Globulas) and 3,000 Red Gum (Eucalyptus Rostrata). Stratton estimated his costs of planting and caring for the trees until some revenue was derived thereform, at $150 an acre. His seedlings were obtained from seedbeds which he had established in 1868.

Another leading competitor in tree planting was Thomas Edwards, also of Sacramento county, who planted 7,000 Black Locust trees in 1869. Edwards estimated that his total cost of planting and care of the trees was only ten dollars a year and told the board he expected to have sufficient fence posts for himself and his neighbors ten years from the date of planting. About the same time, in Santa Barbara county, Ellwood Cooper was propagating eucalyptus on a large scale and in his book, published in 1876, states that he has 50,000 eucalyptus trees of various species growing on his ranch.

Charles Nordhoff, well known American writer of the 19th century, lived for eleven months in California in 1847. Returning 25 years later he spent many months rambling up and down the State, visiting the remoter districts as well as the larger centers of population. Undoubtedly, he received much encouragement, if not actual financial remuneration, from the Central Pacific Railway in the production of his book, "California", published in 1875. This literary work became a handbook for prospective California settlers, and has been widely quoted by historians since. His word picture of rural California of the seventies has probably never been excelled.

Speaking of the propagation of tree growth in the treeless Interior Valley Region, Nordhoff stated that the farmer could plant "live" fences of willow, sycamore, and cottonwood. This practice was literally followed in the Sacramento and San Joaquin Valleys, although it seems that this historian was somewhat over-optimistic with reference to these "live" fences when he told the prospective settler that they would "after the second year yield him all the firewood he needs, without further trouble".

Wheat

In Nordhoff's clear-cut description of California rural life of that time, he urges settlers to come West to settle in California and mentions the large volume of "Congress" lands -- as he terms the public domain. He also calls attention to the cheap, fertile lands offered by the railroad interests. His independent observations follow closely the official State reports for the period. However, in his Utopian description of rural California, he tempers his advice to settlers by citing the barrenness of life on the wheat ranches, by renters seeking a start in California, as follows:

"There is a shanty for cooking and sleeping...There is a well, and a barn roomy enough to hold the hay and barley, and the teams. The renter either has a house of his own elsewhere, or, if he is poor, his family live in this shanty; there is no vegetable garden, there are no trees, there is absolutely nothing to make life endurable and pleasant; and the only care of the owner and tenant is to get as much wheat out of the land each year as they can at the least expense... It is not a pleasant system of agriculture, nor one which can be permanent."

One wheat farmer quoted by Nordhoff, had told him, "We don't go a cent on anything but wheat in this country; we all want to get rich in two years." Nordhoff visited and dined at Chinese railroad construction camps and stated that the Chinese coolies, using their own merchandising and mess system, had more food variety and lived better than their white farmer neighbors.

This early California writer verified the published statements of the official agricultural body when he predicted the future agricultural greatness of the State, asserting that in 1872 mining was virtually "played out" as a leading use of California land, writing that "the people are slowly discovering that the great source of the State's wealth is in its productive soil".

Continuing his description of the great grain fields of the Interior Valley Region, Nordhoff advised settlers that the farmer with a maximum of 160 acres of land, producing fruits, nuts, field crops, and livestock, would eventually be wealthier, healthier, and happier than the one-crop farmer seeking quick riches. He painted the following word picture of existing conditions in the wheat belt:

"There are hundreds of farmers in California, men who would be thought wealthy in any farming community in the East, who own several thousand acres and who do not even raise a potato for their families. Wheat, wheat, wheat, is their only crop, and for this everything is neglected. Their families live on canned fruit and vegetables; all their home supplies are bought in the nearest town of the groceryman; in a good season they sell their wheat for a large sum, and either buy more land or spend the money in high living; and when a dry year comes they fall into debt, with interest one percent a month; and when the next dry year comes it brings the sheriff. I advise farmers from the East to be content with small farms of from eighty to at the most two hundred acres. The rage for large possessions has been a curse to the farmers of this State. I have seen a wheat field of fifty thousand acres in the San Joaquin Valley; fields of wheat of one thousand to five thousand acres are not uncommon."

Wheat was the king of California crops almost to the turn of the 20th Century, the peak of 3,300,000 acres being reached in 1899. The following figures show the average annual acreage of wheat and also barley by five-year periods, during the three decades:

Five-year Period	Wheat (acres)	Barley (acres)
1870-1874	1,622,000	436,000
1875-1879	2,352,000	562,000
1880-1884	2,681,000	586,000
1885-1889	2,867,000	764,000
1890-1894	2,712,000	767,000
1895-1899	2,630,000	893,000

Before the soil was depleted by one-crop farming, some of the individual grain land holdings had grown to enormous size. In 1890, Lowell Alexander Richard operated the largest farming outfit in the world when he planted, cut and threshed an almost unbroken field of standing grain of some 300,000 acres, centering around the present town of Ripon, and extending from the Sierra Nevada foothills to the Coast Range. At that time less than 100 men owned 1,600,000 acres of wheat lands - further north in the Sacramento Valley.

Farm tenantcy really began in California during the early days of the wheat era. Settlers landing in California with little or no ready funds, leased from the large owners on a share crop basis grain lands which required neither irrigation nor fencing and offered seasonal work, sometimes while the tenant himself was acquiring a quarter-section of land of his own. Another class of tenants was the ex-miners of

gold rush days who for several decades were the nucleus of a considerable speculative agricultural population. Denied the expected remuneration from their original mining ventures and more or less nomadic in disposition, they turned their hands to any agricultural pursuits which promised quick financial returns for little or no investment. These agricultural adventurers were quite common in all lines of farming in California for several decades.

By scrip purchase, through the operation of the Swamp and Overflow Act, and by other means, the large owners secured the bulk of their lands at a cost of not more than 75 cents an acre, so that on a large acreage a yield of as low as five bushels per acre, with wheat at an average price of $1.50 per bushel, brought in profitable returns; in fact, there are cases on record where a production of three bushels to the acre showed a profit on the investment.

While sandy soils showed yields of five to ten bushels of wheat per acre as against a return of ten to twenty bushels per acre on the heavier clay soils, crops on the sandy soil could be grown more profitably. The sandy soil could be worked more cheaply and it stood up much better under constant cropping, eliminating the land idleness necessary in summer fallowing.

Gang plows, hauled by eight-horse teams, broke up the land and ten such outfits in one of the immense wheat fields was a common sight. The average planting of one of these eight-horse teams was 640 acres per season, on the basis of eight to ten acres of plowing and seeding per day. Headers harvested the standing grain, feeding it into the wagons which hauled the heads with their short straws to the nearby threshing machine. A heading gang consisted of three headers and nine wagons, a total of 23 men and 83 horses. This outfit handled 150 acres of grain per day. Quicker and more efficient farm machinery consistently marked the progress of California wheat farming up to the days of the huge combines which cut, threshed, and sacked the grain in one operation over the land.

After harvesting, the land was brushed or harrowed to scatter and cover the seed shelled in harvesting operations. The resulting volunteer crop sometimes yielded heavier returns than the original planting. Dry, sunny harvesting weather was always certain; the grain was of a flint-like quality adaptable for ocean shipment; there was no loss from dampness or molding, so that California wheat commanded a premium in the market and either as grain or in the form of flour, was shipped to all parts of the world.

From a production of six million bushels in 1860, California wheat jumped to a production figure of sixteen million bushels in 1870; to twenty-nine million bushels in 1880; to thirty million bushels in 1882; 32,600,000 bushels in 1883, and up to fifty million bushels in 1889. Although grown in all parts of the State, the leading wheat-producing counties were Colusa, Butte, Solano, San Joaquin and Stanislaus. While phenomenal yields were recorded, and returns of 70 to 80 bushel per acre on comparatively small areas were not uncommon, the average State-wide yield had dropped to 16 bushels per acre in 1888.

Diversified Agriculture

Other agricultural crops gradually pushed to the fore and the 1870-1890 period marked the foundation on a volume production basis of many varieties of the California fruits now so widely known. In the seventies there was still available much first-class public land suitable for agriculture. Prices of privately-owned land in the Southern Coast Region had advanced considerably. In the vicinity of Los Angeles in the middle 1870's, old records show land prices per acre as follows:

Inferior pasture (wild hill lands)	$2.75
Dry farming land	5.88
Orchard and vineyard land with water	$25 to $100
Land suited for semi-tropical fruits	$40 to $ 60
Select fruit land with ample water	$75 to $100
Producing olive land with water	$75 to $200

There was a wide range of prices, however, and good fruit land with a fair prospect of irrigation water could be picked up in the more remote areas for a very low figure.

By 1865 there were only about 5,000 producing orange trees in all of California - half of them on the rancho of Wm. Wolfskill in Los Angeles county. In 1875 that county was shipping to San Francisco as much as five million oranges a year. In 1841 Wm. Wolfskill, leading pioneer of Mexican days set out two acres of oranges with seedlings obtained from the San Gabriel Mission. This was the start of California's great citrus industry. Wolfskill, a leading cowman as well, pioneered several of the Southern California crops for which the region later became famous.

Los Angeles County in the seventies was still a livestock county. Fencing of farms was necessary to protect growing crops from roving range stock. Fenced protection costs as much, and sometimes more than the planted fruit land itself. Gross returns on a 10-acre orange orchard in the Los Angeles vicinity in the early seventies ran as high as $11,700,

according to the figures of that time. Altho the great influx of population to Southern California did not materialize till the last decade of the 19th Century, these early-day orange groves were really the beginning of the small farm movement in that section of the State.

As a decided contrast to the great wheat farms and cattle ranches, members of the Anaheim colony, established in 1863, were satisfied with small individual holdings. Each settler owned twenty acres and a town lot. Each colonist planted his holdings mostly to grapes, and in 1875 was rated as being worth $5,000 to $10,000, not a bad return for twelve years of small scale farming. At this time wine grapes showed gross returns of about $300 per acre in Southern California. There seemed to be no lack of market for California wine, either in the southern or northern sections of the State. The product sold readily at fifty cents a gallon, f.o.b., the local ranch in the San Bernardino Valley, and in surrounding sections.

Settlers in Sonoma County finding grain production unprofitable, just as had the Russian colony half a century previously, turned to viticulture. In 1872, Sonoma grape land, unimproved, sold for $20 to $25 an acre and one man could cultivate and take care of 25 acres, the size of the average vineyard in that locality. The cost of bringing vines into third year production was $50 per acre if all labor was hired, and the returns the third year were around $11 per acre. By the fifth year the yield grossed $65 an acre, with increasing revenue each year for some time thereafter. Returns were slow but sure, and Sonoma county farmers achieved great success in wine production, forerunner of the vast production of the present time. Raisin grape production was started on a small scale in the dry San Joaquin Valley climate in 1872 - also a forerunner of the great industry of later years.

It was many years before California produced on anything like a commercial scale all of the almost 200 crops which bring in the tremendous agricultural revenue of today. Many of them got their start in the 1870's and 1880's. During this period there were several crop "booms", the speculative nature of California's agricultural land use being in a sense a hangover from the get-rich-quick mining days. Some of these booms were the foundation of today's special types of agriculture, carried on and expanded through the years. Others lasted a brief time and collapsed, some of them to revive later on a permanent, prosperous basis, while those that expired for good usually involved heavy financial loss

to many innocent and ignorant investors. The name "California" continued to be a shining lure to non-residents and any project involving California land use found ready purchasers of stock in the venture, not only in the United States but in other parts of the world.

Altho coarse fiber cotton had been produced on a small scale by the Missions and Los Angeles cotton exhibited in Paris in the sixties had received favorable comment, no commercial production was attempted till the early seventies when a Mississippi planter named Strong planted several hundred acres near Merced. The venture proved a failure. About the same time a cotton producers' association was organized in the southern San Joaquin Valley. This organization purchased 10,000 acres of land where Bakersfield now stands, made a heavy investment in improvements, and imported negro labor from the Southern States. This project was also a failure, due mainly to the field hands leaving for higher wages in other lines of work.

Silk culture created a furor in the seventies, centering in Los Angeles, Santa Barbara and Santa Clara Counties. Even Washington officials became enthusiastic over the possibilities of silk culture in California. A considerable investment was made in mulberry plantations and the propagation of the silk worm, before the excitement died down. Continued on a small scale for a number of years with a manufacturing plant of some pretensions in San Francisco, silk culture, which could not compete with the cheap labor in the mulberry groves of the Japanese Empire, never became a leading California land use.

Ramie had a somewhat similar history in California. In the agricultural reports of the seventies, pages are devoted to the great possibilities of this fibrous plant, and farmers throughout the State were urged to go into its production on a large scale basis. Most California land use historians give ramie but passing mention; nevertheless, in 1871 raw ramie brought $2.00 a pound in the California markets and John S. Finch of Hayward, who planted two acres at a cost of $200 an acre, realized returns of $5,760 per acre, reporting to the State Board of Agriculture, "Ramie is King!"

Official tests made at Sacramento in the middle eighties, when ramie production was still being urged by some State authorities, showed that its filaments could be separated into a floss as fine as silk. During these tests a strand of ramie fibers supported a weight of 252 pounds without breaking, while a hemp strand of the same size snapped under a weight of 25 pounds. The State Agricultural Society in 1890 still predicted that ramie would become a leading California crop, but its place was gradually taken by other fibrous crops, local and imported, such as cotton, flax and hemp.

The history of tobacco production in California is a stormy one. Predictions in 1871 by agricultural experts asserted that California would outdo the Southern States in the quantity and quality of tobacco produced. However, even among the varied California climates, none were best adapted for this crop which became a minor one, produced mainly for the extraction of nicotine. In 1880, some experts still held an optimistic view of its possibilities, altho the production had dropped from 1,240,000 pounds in 1874 to a record low of 73,000 pounds in 1879.

Chicory was another crop which never reached large proportions, but was heralded by State authorities in 1871 as a probable leader. Used as a substitute for coffee, they predicted a large acreage and an almost unlimited demand. Yolo County that year produced 135 tons, valued at $20,000. Another minor crop, which these authorities believed had great probabilities but which never attained much prominence, was castor beans. The State output of this product for 1870 was 28,000 pounds for which the growers received four cents a pound.

It is interesting to note the birth of California's sugar beet industry about this period. In a formal report to the State Board of Agriculture in 1871, W. E. Brown, president of the newly-organized Sacramento Valley Beet Sugar Company, capitalized at one hundred thousand dollars, stated that his company had planted 60 acres to sugar beets that year. He gave the Board details on one day's output of his small plant as follows:

Expenses

30 tons of beets at $5.00 a ton	$150.00
6 cords of wood for engine at $3.00	18.00
31 Chinamen at 80¢ per day	24.80
8 men for boiling, etc. at $2.00 per day	16.00
3 engineers, 8 hrs. each, at $3.00 per day	9.00
Team work, etc	13.00
Bone black, etc	15.00
Superintendent	7.00
Reboiling syrup	20.00
	$272.00

Contra

60,000 pounds of beets yielding 8% of sugar would be 4,800 pounds at 8¢	$384.00
Sale of beet clippings for feed, 6 tons at $2.50	15.00
	$399.00

Recapitulation

Yield, one day's work.....	$399.00
Cost of production.....	272.80
Profit.....	$126.20

It is evident from this old report that the later sugar beet production which created California millionaires got away to a very profitable start.

Not by any means did the fruit and field crop farming development push the cattle industry off the map of California during the 1870-1890 period. Even with the tremendous increase in the number of sheep, this industry continued to rank second to grain farming in the use of California lands. Nordhoff, in his survey of 1872, gave the cattle industry this place.

It must have been a bitter pill for the old time cowmen to swallow when, in order to recuperate their losses from the terrible drouth of 1862-64, many of them were compelled to turn to sheep for quicker and larger financial returns. Most of those who survived the aftermath of the Great Drouth got back into the cow business, and into the saddle literally in later years, though some of the larger outfits - even sheep-hating Henry Miller - continued to run sheep as a side issue to the raising of horned cattle.

It was another lesson learned during the drouth years, that in beef production dependence could not altogether be placed on open land grazing, and California turned to the raising of hay to supplement the native herbage. Alfalfa, introduced from Chile about 1850, and known then as "Chilean Clover" or by its European name of "Lucerne Clover", became a major crop in the seventies. Hay production of all kinds for the entire state jumped from a mere nothing in 1860 to 1,135,000 tons in 1880, and to three million tons in 1890.

Dairying continued to advance with rapid strides and by 1880 the agricultural census shows the number of milch cows in the state to be 210,000. This number had increased to 218,000 in 1883, and to 269,000 in 1889. As a companion livestock product, there were 429,000 hogs on California farms in 1883. The trend in numbers of beef cattle was downward, with a figure of approximately 600,000 head in 1880, and 555,000 head in 1889. Around 100,000 head of these cattle belonged to the firm of Miller and Lux.

Before the railroad opened up the isolated southeastern part of the San Joaquin Valley, a considerable number of comparatively large cattle outfits existed in that section, owned and operated by American cowmen. These cattlemen, called "Pikes

were mostly from the Mid-southern states, founding their herds during the Civil War period. Mostly the lands over which they held sway were public domain, and outside of their cattle herds and saddle stock, their personal possessions were nil.

On the free grass and water of this region many of these "Pikes" became quite wealthy, but they contributed nothing to the permanent development of the state. The richest of them, sometimes worth as much as one hundred thousand dollars in cash and cattle, lived in floorless cabins. Some of them were mere campers, their nearest approach to a permanent home being the wagon which hauled their meager household effects from place to place in the wake of their cattle. Encroaching dirt farmers eventually forced this type of land use out of existence and sheep took the place of cattle on much of the wild land range.

As would be natural with this animal furnishing the motive power in rural life, the horse population of the State greatly increased through the years. By this time, the small, wiry cowhorse of the Mexican era was replaced to a great extent by heavy farm-raised horses and thoroughbred racing and carriage stock. Horsebreeding became a dominant activity in the California agriculture of the seventies and eighties. The agricultural census of 1880 credits California with a total of 256,000 horses and colts and 27,000 mules and mule colts. The census of 1883 gives a total of 290,000 horses and mules within the State. California horsebreeders were taking their place among world leaders in fine horseflesh.

Henry Miller, Cattle King

Probably in no country in the world outside of the United States could there have developed a career such as that of the German-born butcher, Henry Miller, known for over half a century as the "Cattle King of California". Post-dating the arrival of John Sutter by approximately ten years, Henry Miller's ambitions were somewhat analogous to those of the earlier Swiss pioneer, the difference between them was that while the latter died in semi-poverty, the former built up a huge fortune which lasted beyond his death in the latter part of 1916.

Coming penniless to San Francisco in 1850, he first secured a job, and later established a butcher shop in the boom city of that time. Changing his German name to the American name of Miller, he soon became the leading butcher and cattle drover of California's largest city.

In 1857 Miller made his first rural land purchase, acquiring Los Banos Rancho of 8,835 acres on the west side of the San Joaquin River, his farm home for the next 60 years. He

secured the land at a bargain price of $1.15 per acre, together with 7,500 head of cattle bearing the Double H brand, a mark which was to become famous on the ranges of California, Oregon and Nevada during the next half century. That same year he formed a partnership with Charles Lux which endured till the latter's death in 1882. "Miller and Lux", as Miller's land and cattle interests always continued to be called, was probably the most widely-known name throughout rural California right up to modern days.

With Lux handling the office end of the organization, the two quickly became millionaire land and cattle owners. Henry Miller was undoubtedly the most dominant individual in California land ownership up and down the length of California's ranges and farmlands, as he continued to acquire title to thousands of acres of the best agricultural lands of the State, through the medium of land scrip purchase, under the Swamp and Overflow Act, and by purchase from the railroads and other private land owners.

Henry Miller never passed up a chance to acquire land and, while fundamentally honest, he was extremely shrewd in all his business dealings. Usually he was able to jockey the sellers into a position where he could secure desired lands at his own prices. The swamp lands along the San Joaquin River were a sinecure for Miller's acquisitiveness, and in the course of a few years he secured title to unbroken tracts of land along its banks embracing some 100,000 acres. In the heyday of the Miller reign over the cattle ranges of California, Oregon and Nevada, Miller, ever on the move over his broad domains, could drive almost the entire length of the State and into the neighboring states, (by horse and buggy) stopping each night on his own lands.

A regular dynamo of energy even up into his old age, Miller was fairly popular with his own employees whom he treated well, but from whom he also exacted the same industry and intensive interest in the firm's work which he himself displayed. This energetic German-American cattleman and farmer divided his land empire into sections, each section in charge of a foreman who was responsible for its proper use and whose word, under the owner, was law. Under the foreman worked the vaqueros and ranch laborers. Many of the riders of the Miller and Lux regime were worthy successors, in horsemanship and skill with the lariat, to their predecessors of Mexican days. The difference was that most of them were ranch laborers as well as range riders.

No detail was too small to escape Henry Miller's notice while on his continual inspection trips and suggestions to his field

foremen - verbally on the g round but often followed by written instructions on his return to headquarters - were as rapid and constant as machine gun fire. His standard instructions included, - "Feed all comers; do not fence springs; keep sheep off Miller and Lux lands; feed employees well; establish and maintain good living conditions". The hospitality of the Miller ranches and cattle camps were taken advantage of by itinerant laborers and hoboes whom Miller allowed to sleep in barns or especially-equipped outhouses, but not in the haystacks where they might start a fire. When cooks employed by Miller complained of the extra labor of dishwashing involved in feeding these itinerants, he tersely established the rule that they would eat after the regular employees had been fed, using the same tableware. Thus the section covered by the Miller and Lux holdings became known in hobo parlance as "The Dirty Plate Route". In some sections this rule of feeding all comers excluded sheepherders.

Henry Miller took a deep interest in reclamation and irrigation, and besides irrigation projects of his own, secured a lion's share of the works and water of the pioneer San Joaquin and Kings River Irrigation Company, which alone involved 103 miles of main canal. By as early as 1872, Miller and Lux were maintaining 120 miles of fence in the San Joaquin Valley. Raising hay when necessary, Miller's policy, however, was to fatten cattle on the open range or on improved pastures, closely guarding against over-grazing on his lands. He had always a supply of hay on hand for use in possible drouth periods.

In 1888, the firm of Miller and Lux, besides their Oregon and Nevada holdings, owned over half a million acres of land in 19 California counties, and 100,000 head of cattle. The firm sold that year over one and one-half million dollars worth of meat. In 1890, in addition to lands which the firm actually owned outright, they leased some 300,000 acres additional range and pasture lands. Miller capitalized on the severe drouth of California in that year of 1888 and purchased many ranches of insolvent cattlemen for a low figure - always at his own price. These lands he stocked with his own cattle which his foresight had saved from the calamitous losses which overtook his neighbors' through hay production and irrigation.

Other Big Livestock Ventures

Other large cattle outfits were very much in evidence throughout California during the seventies and eighties. Some of the American successors to the Mexican cattle barons, often men who had established themselves in the State prior to American occupation, carried on large scale operations in

much the same manner as their Mexican-Californian predecessors, but with a better class of livestock and larger financial returns. Current rodeos, in which neighboring cow outfits joined in the annual roundup, often witnessed herds of cattle numbering up to 20,000 head, gathered at a central separating and branding point.

One such big cattle outfit was the Santa Margarita Rancho, lying mainly in San Diego county. This was owned for several decades by Juan Forster, English-American, who had married the sister of Pio Pico, California's last Mexican governor. The large rancho was operated much in the colorful manner of pre-American days. Nordhoff says that in 1872 the hospitality of this wealthy land and cattle owner was extended to all comers and that during the writer's sojourn there that year between forty and fifty people, members of the family, guests, and managerial employees, took their meals at the big ranch house daily. Containing originally 35,500 acres, and later built up by consolidation of grants to 205,000 acres, this old land grant was maintained as an independent unit right up to the days of World War II. It was taken over by the U. S. Navy in 1942 and is now known as Camp Pendleton Marine Base.

Mention has been previously made of General Edward F. Beale's rancho in Tejon Valley. In addition to being officially Superintendent of Indian Affairs, Beale engaged in ranching on a large scale and his holdings, with the Tejon Rancho as a center, had by the early 1870's grown to 200,000 acres, besides some 300,000 acres of public grazing lands which his own lands controlled. The same energy and organizing ability which made Beale a conspicuous figure in the California of the fifties, characterized his ranching operations at Tejon Pass.

Traversed by 80 miles of county and public roads alone, these large land holdings were, in the seventies, devoted mainly to sheep raising, some 100,000 head of this class of stock being handled by the Tejon Ranch interests. Under the supervision of the superintendent and staff at the Tejon headquarters were "Majordomos", each in charge of a division of the range. The territory of each "Majordomo" was in turn divided into sections, for each of which a "ration master" was responsible, this position being equivalent to that later known in sheep range parlance as "camp-tender". On these ration masters fell the responsibility of seeing that the herders, or shepherds, were properly supplied with food, to see that the sheep were properly accounted for, and to direct the movements of the stock to the best feeding grounds.

The Beale herders themselves each handled a band of from 1,200 to 1,500 head of sheep which they never left for a moment, day or night. The herder personnel included Spaniards, Scotchmen, Indians, and even Chinese. One of the herders main duties was to guard his flock against loss from predatory wild animals, the chief of which was the cougar, or mountain lion. Grizzlies, feared by the herders as a personal menace, took a fairly light toll of their flocks.

At night the sheep were penned in a brush corral, located on some central point on that particular section of the range. Here a "tepestra" was provided on which the herder domiciled himself for the night. These "tepestras" were platforms elevated on poles twelve feet high, which were sufficiently stout to resist the efforts of marauding grizzlies. The poles were too small for the animals to climb. This system of close herding and the incidental trampling of such bedgrounds night after night by thousands of sharp hoofs, had a later devastating effect on lands in that section of the State.

Beale also had living on his large holdings several hundred Indians, located in haciendas here and there over his lands. These Indians were given small areas to cultivate, selling their produce to the ranch management. They were also employed on casual or seasonal work on the ranch. Nordhoff mentions an extended visit to Beale's rancho in 1872 and pays a tribute to the well organized operation of the ranch work. He cites the fact of Chinese being employed at headquarters as gardeners and general servants, and characterizes these employees as "very good men, civil, obliging and obedient". Beale's Tejon Rancho, in its specialized livestock industry, was quite representative of the large one-crop land holdings which have marked California's land use history all through the years.

A thorn in the side of the small settler was the Trespass Act, or so-called "No Fence" law, passed in 1850, and which was not repealed until 1872. This law was all on the side of the cattlemen. It required a fence four and one-half feet high, if constructed of stone, and five and one-half feet high if constructed of lumber or rails. A hedge, if tight and five feet high, was considered a legal fence. It was usually financially impossible for the small farmer to provide this fenced protection against roving bands of livestock, the owners of which were secure against trespass on unfenced farmlands.

Land Laws and Land Acquisition

Up to comparatively recent times, the biggest business of the Federal Government in California was the giving away of

land. The quite common expression "doing a land office business" came into the American vocabulary quite honestly. During the last half of the 19th Century, government land offices were located in all the larger rural centers and everything possible was done to facilitate an individual citizen securing his legal quota of the public domain. This was based on the very practical theory that settled, producing lands meant greater national prosperity than idle acreage.

The old Preemption Law, its successor, the Homestead Act of 1862, the Swamp and Overflow Act - through the medium of State ownership - besides the liberal military bounties and the large volume of land scrip issued, provided sources by which any citizen could acquire a sufficient quota of agricultural lands cheaply for the development, and the maintenance of a permanent home. The Timber and Stone Act of June 3, 1878, however, opened up a new avenue by which the ordinary citizen could acquire land of an entirely different character. Its provisions allowed him to take up 160 acres of non-mineral, non-agricultural land by the payment of $2.50 per acre.

A later act, becoming law on June 15, 1880, condoned timber trespass committed on public lands prior to 1879 by allowing the trespasser to pay the Federal Government $1.25 per acre for the lands trespassed upon. Under these laws millions of acres of California's most valuable timberlands, mostly in the North Coastal and Mountain and Plateau Regions, passed into the hands of private owners.

The Timber and Stone Act proved a splendid medium for land-grabbing activities. Theoretically it was designed to provide settlers with timber or building materials on supplementary wild lands to develop their agricultural holdings. It did not fulfill its purpose. Professional land locators sprang up everywhere in localities where the type of land covered by the act existed. Rural residents were the immediate beneficiaries under the law. The lands were acquired by about as follows: The farmer, his wife, and sons of voting age, each "located", through the medium of an agent, 160 acres of tree-covered land and secured title to this quarter section of timber for $400. Usually, by prearrangement this was sold immediately to large lumber operators at perhaps some small profit which was merely an incentive for signing the papers. The entryman looked very broadly at the assertion that he was taking up the land "for his own use and benefit", squaring any qualms of conscience he might have in the matter with the argument that the small profit that accrued in his transfer of the land to another was to his own use and benefit.

Much of the immense land holdings of some of the big lumber companies of California were built up through the workings of this act. These operations ran on unchecked till the first timber reserves were created in the following decade. The fact that all of the best timber lands in California were not lost to public ownership through the workings of the Timber and Stone Law was due, in part at least, to the belief then existing that the national supply of timber further east was inexhaustible.

It was quite open knowledge that agents of farseeing lumbermen, building up their Pacific Coast land holdings, advanced funds to entrymen to cover the original costs of acquiring the land. In many cases dummy entrymen were used and government officers investigating pending patents were sometimes unable to establish even the existence of the individual whose name appeared on the filing papers.

California had no federal mining laws for almost 25 years after the first great gold discovery was made. The Lode Mining Law, which somewhat stabilized the occupancy and use of mineral lands, was passed on May 10, 1872. It provided that a mineral claim could not exceed 1,500 feet along the course of the mineral vein, nor 300 feet on each side thereof. The law referred specifically to the local customs and mining rules, and thus the "home-made" mining laws of the California hills were written into the Federal statutes.

Land rackets and frauds developed in connection with most of our public land acquisition laws. Particularly in the Mountain and Plateau Region the tendency of settlers inevitable seemed to be to acquire land - and more land - so that the term "land poor" became quite a common term, as applied to the financial condition of the smaller stockmen and farmers who acquired larger land holdings than they were capable of using intelligently.

As soon as the settlers' children reached the legal age, it was quite customary for them to acquire title to public lands under some of the various land laws. They would add such to the family holdings, sell their acquisition to some other landowner, or start to build up a little land empire of their own. There was no scarcity of vacant public land and professional locators who often drew a commission both from the entryman and the later buyer of the land; they canvassed the rural areas for entrymen.

It was common practice, carried on till all lands of any material value in the public domain had been taken up, for larger stockmen to have their employees file a homestead on nearby lands. This was done with the frank agreement that

the stockman concerned would purchase them from the employee when patent was issued. Under the usual procedure in such cases a shack was erected on the land covered by the homestead entry. Then some part of the entryman's personal belongings were moved in. Only such cultivation and development was carried on as would justify testimony at the informal hearing when application for government patent to the land was made.

The entryman usually domiciled himself sufficiently on the land claim to enable him - with some mental reservation - to swear that the claim was his permanent home. Homesteaders helped each other and were helped by the future purchaser with ready affidavits certifying that the entryman had complied with all requirements of the law. Overworked Land Office officials were too heavily burdened with the rush of their work to carry on much of an investigation as to whether or not the homesteader had met the full intent of the law. In any case the entryman was given the benefit of the doubt in the matter.

Thousands of acres of land passed from public to private ownership through the medium of the Swamp and Overflow Act. Witnesses, and even government land agents, inspected lands during spring floods when they were inundated with water for a few days and declared them "overflowed lands". A flow of water was sometimes cleverly diverted from its normal course to cover flat lands and form an unnatural swamp. Lands lying along river courses subject to occasional overflow, or perhaps not at all, were classified as swamp and overflowed lands.

The story is often repeated of men who sat in a boat hauled in a wagon, who later testified to the "overflowed" character of the lands by swearing that they had travelled over such lands in a boat. The one bright spot in the "give-away" land policy of the 1870-1890 period was that the bulk of the land was actually agricultural, mineral, or timber-producing in character, and was later brought into some form of use and production, usually with immense profit to land speculators. By 1890, most of the good agricultural land in California had passed into the hands of private owners. It was not until the following decades that the larger volume of sub-marginal farm land, generally of much greater public worth in its natural state, was exploited.

Railroads

After the completion of the Central Pacific Railway in 1869, railroad development in California itself progressed rapidly, mainly in the construction of feeder lines by the Southern Pacific, an organization which was to become a dominant factor in California rural land use.

The Southern Pacific line connecting San Francisco with Los Angeles was completed on September 3, 1876, and it was not till 1887 that the Southern Pacific had any material competition. In that year the transcontinental system of the Santa Fe was built into Los Angeles. Shortly afterwards this was extended to San Francisco. That same year the Southern Pacific was pushing its line up and down the coast route, and in October 1887 the first passenger train rolled through the Siskiyou Mountains from California into Oregon. Construction of connecting lines to the main arteries north and south, and east and west, continued all through the eighties, either by the Southern Pacific itself or by smaller transit companies, many of which were later absorbed into the S.P. system.

The liberal land subsidies granted by the Federal Government resulted in the Southern Pacific Company being the largest individual landowner in the State. By 1882 the company owned 10,445,000 acres, the lion's share of the 13,700,000 acres originally granted to railroads in California. A large part of this land was located in the southern part of the State. The "Big Four" of the Southern Pacific Company, Charles Crocker Collis P. Huntington, Leland Stanford and Mark Hopkins, sought control of all railroad development in the State. In their ambition to make their railroad system the ruler of California lands, they sometimes adversely affected their own policy of land settlement. This policy was intended to encourage the production of crops to maintain their freight revenues.

More space in California newspapers was devoted to railroad matters during the 1870-1890 period than to any other subject. Mergers, projected routes, and right-of-way disputes occupied the center of the stage, while different rural communities, reaching out for means to transport their products to market, fought for transportation facilities. The Southern Pacific, with its immense land holdings and its dominant financial position, virtually held California in the hollow of its hand.

Pending the final settlement of railroad grants, the Federal Government sometimes withheld from entry large areas of public lands contiguous to the railroad lands, with a further view of affording relief to squatters who had innocently filed on the latter in the belief that they were public domain. This, coupled with the fact that the Southern Pacific pretty much insisted on disposing of its land to settlers in comparatively small farm units, had the good effect of preventing an additional large volume of land from passing into the hands of already large landowners.

Some two million acres of the most fertile lands in the San Joaquin Valley were saved for later settlement by small owners

through this restriction on land acquisition imposed by the Federal Government. Meanwhile, large California land holdings were causing considerable worry in the State. Henry George, leading California writer and expounder of the single tax system, asserted in the seventies that "In all the new states of the Union land monopolization has gone on at an alarming rate, but in none of them so fast".

One of the chief criticisms of the period had to do with the Southern Pacific Company practice of holding up towns and cities for subsidies of cash or land, under the threat of by-passing them with their railroad and building a new competing settlement elsewhere. Usually they could come pretty close to dictating their own terms. To insure their building into the city of Los Angeles, that community was forced to subsidize the railroad to the extent of five percent of the total assessed valuation of the county. On top of this the city itself donated sixty acres of land for a terminal depot. Statisticians of that time asserted that these donations amounted to an average of $100 for each and every inhabitant of the town. Such subsidies were actually justified by later profitable returns when new settlers poured in by the thousands.

In spite of the militant nature of California pioneers and the intense ill-feeling of the time towards the dominant railroad interests, only one outbreak of serious violence occurred. In 1880 settlers of the south central San Joaquin Valley precipitated a battle in which six men were killed and a number seriously wounded. The cause of this "Railroad War", as local history calls it, was a dispute with the railroad over the ownership of lands in which several thousand settlers were interested. So bitter was the feeling against the Southern Pacific at that time that the leading rebel-settlers were feted in their own community as well as in San Francisco, where they were sent to serve a nominal jail sentence as punishment for the crime. The bitter feeling between the rural populace and the railroad is brought out in graphic detail by the great California novelist, Frank Norris, in his book "The Octopus", the title alone of which depicts the public view of the railroad reaching out its tentacles over the California landscape.

The railroads needed revenue-producing passengers and freight traffic and the Central Pacific had hardly reached California before a campaign was commenced to induce settlers to come to the new lands on the Pacific Coast. Special rates were established for homeseekers and special cars, with cooking and sleeping facilities, put into service. The California-bound settler could transport his family, his personal possessions, and his livestock, all under his own hand and eye, on the new trains moving westward. Slow progress and considerable hardship-

compared with modern methods of travel - marked the journey on these pioneer trains, but they were a tremendous improvement in speed and comfort over the slow transit of the ox and horse teams of the preceding era.

Besides the available government lands, fertile railroad lands could be purchased in the San Joaquin Valley and in other locations for $2.50 per acre, and as previously stated, the railroad encouraged settlement by small farmers. In the eighties, the Sacramento office of the Southern Pacific openly advertised that it had for sale at bargain prices more lands and better lands than the government itself, a statement which was literally true.

Sheep, Forests and Fires

The turning of California cattlemen to sheep raising to recover financial losses has been mentioned previously. It is a rather sad commentary on American methods of land use, in which the chief aim was "to get rich quick", that the sheep-raising industry bringing such high financial returns to California should have, incidentally, left so much devastation in its wake. It is perhaps doubtful, in fact, whether or not in the final accounting this industry brought a profit or loss to the State, when it is considered that many decades must elapse before the damage caused by uncontrolled sheep husbandry is entirely repaired.

The toll exacted of California lands by grain farming was mostly corrected in time by switching the use of such lands to some other form of agriculture. Sheep-raising, as it was practiced in the seventies and early eighties, however, not only harmed the agricultural lands of the valley areas, but wrought inestimable damage to mountain lands.

California proved a sheepman's paradise. No housing of stock was necessary and no heavy investment was required. The drouth years of 1862-64 had directed attention to the fact that there was almost unlimited free summer pasturage amid the higher elevations of the Sierra Nevadas. This discovery introduced the method of sheep-raising in California, which has largely persisted to the present day, of keeping sheep during the winter months on foothill or valley lands and securing their summer feed on the mountain ranges. During the prosperous sheep days of the 19th Century, the great bulk of the sheep in the State were maintained on free, open range the year around, feeding their way from lower to higher ranges and back again to fit the seasons.

As we have seen, there were practically no sheep in California at the time of the American occupation. By selective breeding, natural increase and from bands driven across the plains by settlers, their numbers were augmented till they had reached a figure of nearly two million in 1867, and a total of almost three million in 1870. By the middle seventies their numbers had actually become a menace to the pasture lands of the State. Statistics show almost seven million head of grown sheep in California in 1876. This is the high mark in numbers of stock in the sheep industry.

After 1876, the number of sheep in the State took a downward trend. The agricultural census shows six million in 1880, with a drop to 3,016,000 in 1883. An idea of the increase in the sheep population of California is gained from the following figures on the State's wool production in selected years between 1850 and 1873:

1850.....	5,500	pounds
1854.....	175,000	"
1858.....	1,428,000	"
1862.....	5,530,000	"
1866.....	6,546,000	"
1870.....	19,472,000	"
1871.....	22,181,000	"
1873.....	24,000,000	"

One of the pioneer sheepmen of California was W. W. Hollister of Santa Barbara who drove a band of sheep across the plains in 1853. Hollister became one of the wealthiest sheepmen of the State and the owner of around 100,000 acres of land. He was amply repaid for the hardships involved in driving a band of sheep half way across the continent. He was often heard to say in later years that each one of his original band of 500 sheep earned him one thousand dollars before it died.

Altho sheepmen suffered from the bad drouth years of 1862-64, and in the later minor drouth years of 1874 and 1877, their financial recovery was much more rapid than that of the cowmen. Sheep-raising operations showed a net profit of as high as fifty percent, per annum - sometimes more. The following figures cover a sample transaction involving an acquisition of 3,000 head of sheep in the early eighties, as shown by records of that time:

3,000 head of ewes at $4.00 per head.....	$12,000
Expenses, herding, shearing, etc., 3,000 sheep first year at 35 cents per head.....	1,050
Same expenses for 6,000 sheep, second year, at 35 cents per head.....	2,100
	$15,150

First year's wool of 3,000 ewes.....	$ 7,200
Second year's wool of 3,000 ewes.....	7,200
Second year's wool of 3,000 lambs.....	3,500
Market value, 1,500 wethers at $3,00 each.....	4,500
Market value, 3,000 old ewes at $4.00 each.....	12,000
Market value, 1,500 young ewes at $3.00 each....	4,500
Total.....	$38,900

Gross profit, $23,750.

Most of the California sheepmen were French and Spanish Basques from the Pyrenees Mountain section of southwestern Europe. Their background for centuries had been sheep husbandry, and no better flockmasters existed anywhere in the world. This class of people were perfectly at home in the rugged mountains of California and in the seventies their flocks covered almost every accessible acre in the mountain region. Their method of operation remained practically the same well into the third decade of the 20th Century.

A young Basque left his native European mountains, emigrated to the United States, and immediately headed for the wild lands of the West. The clannish nature of the race led Basque Americans to give every assistance to the newcomer, and on his arrival in California he readily secured a job of herding sheep. In a year or so the young herder had been oriented and had absorbed the atmosphere of the transplanted sheep industry in a land of apparently limitless space, where each individual sheep outfit was pretty much a law unto itself. Having shown that he was capable of properly caring for a flock of sheep in the mountains, and was able to compete with other herders into what often developed as a race for the best feed, he was given a working interest in the band of sheep entrusted to his charge.

The usual procedure was that the herder received a very nominal wage, was furnished his keep, but in addition was given a certain percentage of the increase of the herd, in other words, of the annual lamb crop. This method naturally increased his interest in his four-footed charges and, industrious and frugal by nature, in the course of a very few years through this increase of stock, he was the possessor of a band of sheep of his own. His home under the sky, his entire possessions outside of livestock contained in the pack of a belled burro, though not a landed proprietor, he was now a flockmaster in his own right.

Merging his interests with a fellow countryman, or launching out with his sheep independently, he became another of the itinerant sheepmen roving the ranges of California. It was not unusual for a Basque lad, landing penniless in California,

to become the owner of several thousand head of sheep within half a decade or so after his arrival.

Many of these transplanted Basques became wealthy, and they and their descendants represent some of the best citizens of the State. Amenable to law and order and basically good agriculturists, their depredations in the mountain areas of the State must be laid, not at the door of the Basque sheepherders themselves, but rather blamed upon the custom that prevailed, and lack of controlling land-use laws of the time.

Not all sheepmen of the 1870-90 era were of Basque extraction. Many American-born flockmasters, as well as Scotch and Irish, were represented in the industry. Large companies, handling thousands of head of sheep, were formed; big landowners built up herds of sheep to utilize the browse pasturage on their lands and some few of the larger cattlemen carried on sheep husbandry as a side venture. In the latter case, distinctly separate ranges were maintained for each class of livestock, since it long ago became proverbial throughout the California range lands that the proud horned cattle disdained to even pause on open range which had become tainted by the presence of smelly sheep, despite the fact that the same two classes of livestock might graze in domestic harmony side by side on the fenced farmlands.

Regardless of what class of owner engaged in sheep raising, the herder was more often than not of Basque extraction. Good herders made the owner rich; the negligent type meant quick bankruptcy. Short feed, poisonous plants, predatory animals, abnormally deep snows of late spring or early fall, loss by straying, flood and drouth; all meant sudden, heavy losses for the sheepman; thus the Basque herder, usually with a working interest in the flock under his charge, was much sought after.

His devotion to his flock was natural and hereditary, and he would suffer almost any personal privation to insure the safety and well being of his four-footed charges. Many years after the peak of the industry had been reached, a French Basque who had amassed a fortune in sheep and lands in northern California, was asked to what he attributed his success. He answered simply, "I sleep with my sheep". Another sheepman, giving testimony in court on a range trespass case, on being asked if a certain flockmaster's herders would commit trespass, answered without hesitation, "Any sheepherder will steal feed for his sheep if he has a chance". Instances are known of Basque sheepherders sacrificing their lives during adverse weather conditions in the mountains of California in an endeavor to get their flocks to safety.

Spring lambing and shearing operations were carried out at foothill or valley points, after which the ewes with their

lambs were started on a leisurely trip to the higher elevations and moved from place to place in the mountain areas, leaving their high, cool summer range for an equally leisurely trip to a shipping point in late summer or early fall. In some instances on these drives the sheep were in constant slow transit, going and returning.

The lamb dropped in May was in prime condition for the butcher's block in October, having lived luxuriously for his short life span on the free browse and grasses of the California mountains the wethers were marketed; the ewe lambs were saved to form the nucleus of succeeding flocks or to replace the old trail-tired ewes which accompanied the wethers to the slaughter houses.

During the winter months, which included the breeding season, sheep were kept on valley or foothill pasturage, and often while waiting for rains to bring forth the new, green feed, were pastured by the hundreds of thousands on the grain stubble fields of the Interior Valley Region.

One use made of sheep in connection with grain farming operation was to drive them back and forth over low-lying lands on which heavy ground-working equipment could not be taken at certain seasons of the year. In this use, their sharp hoofs covered the grain kernels for a future crop. In the spring, the never-ending cycle of lambing, shearing and summer foraging commenced all over again. Sheep brought in quick financial returns, with two crops a year - the spring wool and the fall lambs.

Everyone is familiar with some pastoral scene reproduced in paints and oils depicting the shepherd and his flock trudging along a country lane on their homeward way, in the light of the setting sun; a favorite pastoral theme of the greatest artists, probably no more peaceful or charming rural scenes have ever been etched in colors on enduring canvas or caught by the lens of our modern cameras.

If one should follow in actuality the plodding shepherd and his flock, he would find the "real" somewhat different from the "ideal", as his nostrils were choked with the suffocating dust stirred up by the tiny hoofs of these central subjects of our famous landscapes. Not visible in the painted landscape scene are those small, sharp hoofs of the sheep which cut the earth over which they pass and stir it up as though it had been dragged by an iron-toothed harrow.

When we look back over the official reports of the seventies, we are constrained to wonder how or why the misuse of land by sheepmen, many of them foreigners with no interest in the lands over which their flocks roamed, could be allowed to even happen at all, much less to continue year after year.

In many cases, particularly on the more open foothill lands, the trampling of almost countless thousands of these sharp hoofs, combined with the close-cropping feeding habits of sheep when grazing on grass, broke up the protective ground cover and when winter rains came, erosion started. Each year saw gullies cutting deeper and wider into the California hillsides. In all fairness to the sheepman, in passing, however, it should be stated that the blame for overgrazing of many of our range areas can be attributed to cattle as well as sheep, since wherever possible the cowman beat the sheepman to the public range to get the cream of the feed before the sheep arrived.

The first and foremost aim of the tramp sheepman was to secure feed for his stock. The lands over which he roamed were covered by the rules of "first come; first served", and "get, while the getting is good". Young tree growth, "brush", in the sheepman's parlance - impeded the movements of sheep almost as much as did the true brush fields which had in many places usurped the lands following the destruction of their original tree cover by fire.

Then there were windfalls and logs, also an impediment to the progress of sheep through the range country. In addition to these natural obstacles there was the additional fact that the burning of the natural ground cover, while producing seriously harmful effects in the long run, was followed during the succeeding year by a lush green cover and immediate feed was usually the aim of the California sheepherders. Thus, the sheepmen took to the use of fire naturally as a means of improving the ranges as they saw it. The long range consequences were not then realized and were little thought of.

Forest and wild lands cannot be thought of as a factor apart in the economic well being of both the rural and urban communities in any state or nation. They are part and parcel of contiguous arable lands, no matter how far distant. Mankind undoubtedly had its origin in a forest, because we can hardly designate the Garden of Eden by any other term. If we do not happen to subscribe to the Biblical theory of man's origin, we cannot contrarily picture Darwin's ancestors as living in any other than a forested country. Ayers Brinser, leading writer on American land use, points out that if the forests as one factor of land use are mismanaged, the entire problem of surrounding land use is out of balance.

America and California, had before them glaring examples of misuse of lands, with the record of the downfall of the Babylonian Empire and the recurring floods of old China, in both cases directly attributable to misuse of the watersheds which were an adjunct to their agricultural valleys. A few early-day conservationists sounded a note of warning, but

neither the hindsight or the foresight of the bulk of California land managers seemed to work too well, and the rape of the wild lands of the State continued practically unchecked during the 1870-90 era of fortune building.

By this time the Mountain and Plateau Region of the State was fairly well known in a general way. The mountain valleys were getting pretty well settled, miners were scouring the country for new prospects, and sawmills had invaded the more easily accessible timbered regions. The ten groves of giant sequoia trees had been discovered and were drawing venturesome outdoor recreationists to view their magnificence. The great Yosemite was discovered by Indian fighters in 1851, and we find Nordhoff twenty years later lauding its natural beauty, recounting its wonders, and urging tourists to visit the area, while at the same time he bemoans the existence of two preemption land claims in the heart of the Yosemite Valley itself.

The appealing writings of the great naturalist, John Muir, played a large part in rousing national and State consciousness, both to the great natural resources of the Sierra Nevada Range, and to the depredations committed therein by transient sheepmen. Muir spent the entire summer of 1869 in the Sierra Nevadas and the Yosemite region and continued his visits in succeeding years. The beautiful simplicity of his descriptions of California's hinterlands stirred the heart of the nation, even into official Washington itself.

The sheepherders, on their return trip to the valley areas in the early fall, habitually set fires behind them. Over a large part of the State's area their valley-bound progress was marked by great clouds of smoke which filled the skies for weeks on end, as immense fires raged unchecked over the California watersheds. Even the great Yosemite wonderland, reserved by the government for public use, was invaded by bands of sheep, altho fires were fairly well kept out of this area by patrols of United States troops. John Muir referred to the sheep in the Sierra Nevadas as - "All devouring hordes of four-footed locusts". In his mention of the sheep-killing propensities of the large number of bears inhabiting the Yosemite region, and their acquired taste for mutton, he stated: "After Uncle Sam's soldiers, bears are the most effective forest police".

In the great naturalist's early book, "The Mountains of California", appears the following:

"Incredible numbers of sheep are driven to the mountain pastures every summer, and their course everywhere is marked with desolation. Every wild garden is trampled down, the

shrubs are stripped of leaves as though devoured by locusts, and the woods are burned.

"Running fires are set everywhere, with a view to clearing the ground of prostrate tree trunks to facilitate the movement of flocks and to improve pastures. The entire forest belt is thus swept and devastated from one extremity of the range to the other...

"A great portion of the woody plants that escape the feet and teeth of the sheep are destroyed by the shepherd by means of running fires which are set everywhere during the dry season for the purpose of burning off the old fallen trunks and underbrush, with a view to improving the pastures, and making more open way for the flocks.

"These destructive sheep fires sweep through the entire forest belt of the range, from one extremity to the other, consuming not only the underbrush, but the young trees and seedlings on which the permanence of the forest depends; thus setting in motion a long train of evils."

Up and down the length of the State, newspapers of the 1870's and 1880's were filled with accounts of forest fires, resultant floods, and the overgrazed condition of the range lands. Referring to the Southern Sierra region, one writer of the time states: "The Kern Plateau, so green and lovely on my former visit in 1864, was now a sea of rolling granite ridges, darkened at intervals by forest, but no longer velveted with meadows and upland grasses. The indefatigable shepherds have camped everywhere, leaving hardly a spear of grass behind them".

W. J. Lord, leading cattleman of Tuolumne County, and who himself ranged cattle in the higher Sierra Nevadas, made the following statement in later years:

"In the seventies there was a shortage of feed and water on the plains and in the foothills and sheepmen crowded their flocks into the mountains in large numbers. Those which came first took the ranges easiest to reach and those who came later had to go to less accessible places for feed. They encountered considerable difficulty in herding their flocks and where brush and timber interfered it was common practice to burn. Most of the burning was done as the sheep were taken from the mountains in the fall to the plains to be put on stubble. This was usually in September.

"Burning at that time became such a practice that people knew when sheep were leaving the mountains by the number of fires set. Smoke from the fires was so thick at times that it was hard to see at midday. No attempt was made to stop fires

unless someone's place was threatened, then back fires were set and usually the fire went some other direction. These fires burned thousands of acres almost everywhere where timber and brush grew in the mountains.

"In the late eighties and early nineties the people began to object to such fires and after a few sheepmen had been rounded up and made to put out the fires they did not set so many."

Contemporary writers during the seventies and eighties stated that in the early fall as many as one hundred fires could be counted within the scope of vision afforded by some high peak. Not all fires were confined to the wild lands, however. Fields of grain fell before the flames, foothill and mountain valley ranches were swept by the blazes, and occasionally the herders' own acts resulted in the loss of their herds as some change in wind brought the fiery scourge to their own campgrounds.

Neither were all the fires which swept the wild lands started by sheepherders. Because of his known habit of burning the forest the sheepherder could easily be made the scapegoat. An official report of 1885, referring specifically to the counties of Los Angeles, San Bernardino, and San Diego, and the carelessness of the agriculturists of that region, contained the following wording:

"Every year disastrous fires sweep off vast areas of this mountain covering. These owners set no watch and take no heed of their property, and the fires run into and destroy the timber as well as the brush. This careless and wasteful destruction of the forests is injuring the climate, the agriculture and the future prospects of Southern California."

The great redwood region also was not exampt from the combination of sheep grazing and fire. Sheep, crowding the range, created a shortage of feed and their masters resorted to the expedient of setting fire to the young growth to provide more open range. Sometimes they went a step further, girdling the smaller growing trees so as to kill off the overshading forest cover.

Even back in 1798 the extreme danger of fire on California lands during the long, rainless summer season was recognized, and prompted the first official forest fire control measure. On May 31 of that year, Jose Joaquin Arrillaga, the Spanish governor, issued a fire prevention order and the Missions were canvassed on the subject. Christian Indians were threatened with the "rigors of justice" should a fire result from any act of carelessness on their part.

The first California State forest fire law was enacted on February 13, 1872. It provided for a $1,000 fine or one year in jail, or both, for anyone deliberately starting a fire or found guilty through carelessness or neglect of allowing a fire to escape and burn over wooded country or forest lands. No special State machinery was established to enforce the law, but local peace officers in their respective communities took scattered individual action, and fire ordinances were eventually passed by some of the county governments.

In July of 1874 the Siskiyou County sheriff advertised in local papers a reward of $100 to anyone furnishing knowledge of parties either wilfully setting fires or carelessly allowing a fire to escape. In 1884 San Diego County passed an ordinance offering a reward of $100 to anyone furnishing information leading to the arrest and conviction of parties starting rural fires, either wilfully or carelessly. On the whole, however, little real official action was taken to halt damage to California lands, either by overgrazing or by the ravages of uncontrolled fires.

Just as had been the case during the gold rush mining days, the policy of "laissez faire" continued to mark California rural land use, and it was not until March 3, 1885 that the State legislature passed any law broadly relating to forests and forestry matters. This act created a State Board of Forestry, the duties of which, however, were more investigative than administrative, since the total appropriation for its operation was only $5,000 per biennium. Of this amount $175 per month went to a paid secretary, the available balance to pay all the expenses of the board.

On March 7, 1887 an amendatory act became law. This broadened the powers of the forestry board so that its employees had authority to make arrests for violation of forest rules such as setting fires, and timber trespass. In its report of 1885-86 to the Governor, the board said in part:

"The present fires which desolate the forests of California are a violation of the law and are exceedingly destructive to public property. After continued earnest effort, in many cases with legal advice at our own expense, we are obliged to report that we cannot arrest or convict these fire-setters without the assistance of special officers who can be sent into the mountains to secure evidence and find the depredators."

Referring specifically to Ventura County, the report continued: "There is perhaps no part of the forest but which has been ravaged by fires".

Fire agents had been appointed here and there throughout the State but they were loosely supervised and proved a failure so

far as stopping the occurrence of fires was concerned. The positions were later abolished. In its second biennial report the State Board of Forestry told the governor that "it was making efforts to reform cutting on public forests in the mountains since individuals had been indiscriminately cutting timber without obtaining title to the lands".

Politics entered very much into the picture in the functioning of the infant State Board of Forestry with the development of a personal feud between Governor Robert W. Waterman and Senator T. J. Moffitt of Alameda, a member of the board. The governor replaced Moffitt with Joaquin Miller who failed to legally qualify for membership on the board, but meanwhile, Moffitt refused to be "fired". The basis of these personal differences between the chief executive of a State and one of its leading legislators now seem to be ridiculously childish, but this personal feud did have the effect of slowing up much needed reforms in California land management.

By 1890 most of the large volume of timbered school lands had been practically given away to big timberland owners in a manner more lavish even than that which marked the policies of the Federal Government, and the State Board of Forestry at this period was endeavoring to make something out of the small scattered residue.

We find the board, in its biennial report of 1888-90 to the governor and legislature, asserting that unless prompt remedial action is taken, the timber supply of the redwood region would be exhausted in 40 years. In the same breath, however, they mention the fact that "California's lumber resources in the Sierra Nevadas seem boundless".

Stressing the prevalence of forest fires and their inability to cope with the situation on the small finances at their disposal, the State, nevertheless, seems to have made some progress in forestry matters when the board announces the establishment of two reforestation stations, one at Chico in the north, and the other at Santa Monica in the south. That the members of the State Board of Forestry were alive to the need of agressive conservation action and were somewhat discouraged at the lack of appreciation of this need in other quarters, is illustrated by the following paragraph taken from their 1888-90 report:

"Every day's delay makes proper forestry measures more expensive and more difficult. The condition of the nation in regard to forestry may be compared to the story of the Roman Republic and the Sibylline books. Each time these books of prophecy were offered to the Romans and refused, a certain number were destroyed. When they were at length purchased their price was enormous and the books were but a fractional part of what they had once been. Thus it will be with forestry and forestry must come some day."

Mining Development

The value of California's mineral wealth can hardly be over-estimated. Among the 70-odd valuable mineral products which mark California production of today, gold was for decades the indisputed leader. California gold helped pay for the Civil War; it proved a bulwark of prosperity in the post-war decade of 1866-75; it paved the way for national expansion, and played a big part in establishing the United States of America as the leading nation in a "gold standard" world. Bancroft states that between 1848 and 1881, California added $1,178,000,000 in precious metals to the coffers of the world, $14,914,000 of which was silver, the balance gold. Gold production for the years 1881 to 1890 totalled $151,525,314.

In addition to the Mother Lode country and the rich Trinity Mountains, other minor gold fields swelled California's production of the yellow metal during the 1870-90 period. Discoveries in almost all sections of the mountain areas of the State from time to time precipitated local gold rushes. Some of the smaller fields, such as the Julian-Banner district in San Diego county, produced heavily for a short time and then settled down to a small, steady flow of gold output. Never again would California miners pick up chunks of gold weighing as much as 200 ounces, or even more. Such occurrences were not duplicated in the later periods during which California gold was produced by quartz and hydraulic mining in place of the pioneer methods of the miner's pick, shovel, pan and cradle.

Mining operations steadily advanced, however, the field widening to embrace semi-precious and non-ferrous minerals. In 1881, the total quicksilver production of the world was 115,600 flasks, weighing 76 pounds each. Of this world-wide production, 60,851 flasks were taken from California lands that year. This valuable metal, increasing in value and use as time went on, particularly in connection with fold-mining activities, was one of the State's leading mineral products of that time, the greater part being produced in Santa Clara and San Luis Obispo counties.

Copper, various clays, borax, and different types of building stone, began to attract the attention of mining interests during the seventies and eighties. Coal of a fair quality had been discovered in Contra Costa County in 1852, and an output of 144,000 tons found its way to the San Francisco market in 1881.

As a forerunner of the immense oil industry which has marked the use of California lands, the development of asphalt in Southern California is of more than passing interest. This

product played an important part, not only in the birth of the petroleum industry itself, but in some sections of the Southern Coast Region as a factor in economic recovery from the depression which followed the drouth of 1862-64.

The muddy streets of San Francisco needed paving materials; the cattlemen of Southern California were reaching out for any means to recuperate their broken fortunes; so asphalt mining came into being. Considerable deposits of asphalt were known to exist near Goleta, in Santa Barbara County, and a still larger volume farther south in Ventura County. Mines were opened in both sections, the product being shipped in its raw state up the coast to the fast-growing California metropolis. Both deposits were located handily adjacent to the sea coast.

The asphalt was dug from the g round by hand labor and hauled by ox carts well out into the ocean surf. From the carts it was lightered to sturdy 300-ton schooners, by which it was conveyed to market. The price of the raw, asphalt in the middle seventies delivered in San Francisco, was $22 per ton. The discovery of a new field of more easily-worked, purer asphalt near Summerland, also in Santa Barbara County, brought the market price down to $12 a ton.

The Ventura and Santa Barbara asphalt mines were worked for some years. Ocean piers later were constructed to facilitate loading the small freighting schooners. It was estimated by mineralogists of that time that there were three million cubic feet of asphalt readily available in the Santa Barbara field alone, extending along the coast from Goleta to Carpenteria. The industry languished in 1878 when Thomas W. Moore, a prime mover in the asphalt mining activities of this section, was murdered by squatters who had settled on his Ventura County ranch. The venture paid well while it lasted, and some of the streets in San Francisco today are still paved with the asphalt produced in these crude mining operations of seventy years ago.

Southern California proper, was the cradle of California's petroleum industry. Progress in oil development, however, was fairly slow during the seventies and eighties, prior to the internal combustion engine era. Most of the oil pumped from the wells then operating was refined into kerosene. Many Californians still living recall the transition from the time-honored tallow candle to the clear light of the kerosene lamp and lantern, as mineral products replaced animal products in furnishing illumination. Many of the smaller operators in the oil fields collected the raw product in trenches, not having sufficient capital for drilling operations.

In 1873, Pico Wells, near Newhall, came into being. Steam machinery was introduced to the California oil fields in 1877, and wells were drilled in Los Angeles, Santa Barbara, and Ventura Counties in the eighties. During the same decade fields were also discovered in the Puente Hills and Whittier districts of Los Angeles County and asphalt deposits of large proportions indicated further large oil pools in the same general localities.

In 1878 the total production of petroleum in California was placed at 16,000 barrels. This production had expanded by 1888 to 690,000 barrels, valued at $1,380,600. After 1888, production suffered a big drop. It again began its big upward revival in the middle nineties. The industrial world was not yet ready to more than lightly tap the tremendous storehouse of California's "black gold". Natural gas, a close companion to the petroleum industry, was yet in the background.

The total value of all mineral production in California in 1887 was $19,785,868; in 1888, $19,469,320; in 1889, $16,681,731 and in 1890, $18,039,666. The value of petroleum production this last year had dropped to $384,200. Gold continued to represent approximately seventy percent of the value of the State's mineral output during these years.

Debris and Silt

Even in the days of the gold rush there was a lot of conflict between mining and agricultural interests. The production of the yellow gold which was the basis of California's prosperity and which contributed so much to the wealth of the nation and of the world, also played havoc with a large area of California lands. Tens of thousands of miners engaged in tearing into the earth of the Sierra Nevada foothills, left the land pockmarked with pits, shafts and ditches, and destroyed the bulk of the native vegetative and tree cover over several million acres. These ravages, however, were but a drop in the bucket compared to the devastation brought about by later quartz and hydraulic mining operations, which did not get properly under way till 1855.

In that year the State legislature evidently recognized the menace to agriculture which this form of mining brought about. This is indicated by their passage of a law prohibiting any person from destroying growing crops or injuring agricultural development by mining operations. However, national and State laws and the courts on the whole, very much favored the harvester of gold rather than the gleaner of annual farm crops. In spite of the Supreme Court decision in 1884 which stated that "it was unlawful to work a mining claim or use it directly or indirectly so as to cover the agricultural land of another with sand, gravel or debris", the gold miner still was favored.

Another court decision of the time, however, set forth that "any person settling on agricultural lands which are known to be mineral does so subject to the right of the miner to carry on operations so as to damage the agricultural use as little as possible". While admitting the virtue of the agriculturist's contention of damage to his lands by upstream quartz and hydraulic mining, the courts decided again and again that hydraulic mining, permitted under the Civil Code of 1872, was fully protected by both Federal and State laws.

In addition to the tailings of quartz mills dumped into the streams, hydraulic mining operations at higher levels not only obliterated completely the lands on which the operations were located, but washed down almost countless tons of "slickings", or debris, to choke the stream beds and devastate the agricultural lands below. Obviously, the miner at the higher elevation trespassed on the valley lands of the farmer to an even greater degree than if he physically conducted his mining operations on the farmer's own lands. For about four decades, California lands suffered heavily from hydraulic mining operations.

This form of separating gold from its companion earth was highly profitable, even when the gold content of the pay dirt was quite small. One typical operator of the late seventies put 2,000 miner's inches of water per day through his high pressure nozzles in washing the soil away on the area he was operating. This particular operation consumed 100 days, and the dirt averaged one-quarter of a penny-weight of gold to a cubic foot of earth. During this 100-day operation the miner washed down one million yards of gravel from which was obtained a gross return of $32,000. Of this, $12,000 was net profit to the operator.

As an illustration of the debris volume accruing from big scale hydraulic mining over a large area of the State, the dirt and gravel washed away in this 100-day operation by one comparatively small concern represented a block of land 1,100 feet long, 300 feet wide, and 80 feet deep. The historian, Hubert Howe Bancroft, estimated that in the eighties hydraulic mining in California used 712,940,000 gallons of water daily.

The channels of the streams became so choked with gravel and sand that in the Yuba River section it was impossible to tell where the original channel of the river had been located. In 1880 one expert estimated that over a million yards of "slickings" had been washed down on the Yuba bottomlands devastating 20,000 acres of rich agricultural lands. At the same time, another expert asserted that the debris washed into the channel of the same river, in the foothill area above the valley land, to be over 48 million yards.

The plane of the low water level of the Sacramento River had already risen in 1868 six and one-half feet above that of 1849, and the level of the river bed continued to rise annually. In 1880 Bear River was choked with debris from its source to its junction with Feather River, and the bed of the latter stream had been raised eight feet. Winter floods were an annual event on bottom lands.

Agricultural interests, complaining to the State government in 1879, valued the loss of agricultural lands in Yuba and Sutter Counties alone at $12,876,000, based on the land values of that time. One farmer whose holdings had been wiped out of existence testified that he had purchased his 1,000-acre farm in the Yuba River bottomlands in 1857. At that time the river banks were more than twenty feet above high water, and his farm was free from water during winter rains. In the winter of 1862 most of it was under six feet of water which, in receding, left large banks of sand and sediment. By 1875 his lands were buried under twenty-five feet of silt which reached to the top of the telegraph poles. Up to that time, by the construction of levees, he had kept flood waters from 90 acres of higher-lying land, but that year this remaining area was also inundated.

Such cases as this were quite common and through the years between 1875 and 1887 we find a roused State legislature, submitting urgent resolutions to the National Congress praying for funds to open up the choked channels of streams, and asking for some form of relief from the mining interests. The problem had become too big for the State to handle alone.

It was not until the nineties that Federal advice and funds materialized. Meanwhile considerable relief was afforded the bottomland farmers when in 1884 a decision in a test case, which had been fought through the State courts for years, placed restrictions on hydraulic mining and narrowed the zone of such operations.

Agricultural Production

The State Agricultural Society continued to be a dominant factor in stimulating and directing rural land use in California during the seventies and eighties. Every corner of the State was represented in its membership, with the parent organization located at the State capital. In their report of 1883 they acclaim their unbounded faith in California's agricultural futur by the statement, - "California is certainly the paradise of the fruit grower" - thus envisioning the trend from the huge wheat fields to the irrigated orchards beginning to dot the California landscape. However, the surface had not yet been more than barely scratched in comparison with the orchard farming which was to mark the ensuing decades.

Agricultural census figures for 1873 set California's apple production at thirty million pounds; pears and peaches at ten million pounds each; apricots, four and one-half million pounds; cherries, two million pounds; oranges, four and one-half million pounds, and lemons one and one-half million pounds. California is credited with having marketed 60 tons of raisins in 1872; 750 tons in 1880, and 19,000 tons in 1890. The latter eighties marked heavy planting of olive trees, both in groves and as border trees. The listed number of these trees jumped from 13,000 in 1885 to 275,000 in 1890.

The great citrus fruit industry was firmly launched in Southern California during the 1870-90 period. It was greatly stimulated when the standard Valencia species introduced by the Missions was supplemented by the Bahia Navel, brought in from Brazil in 1873. During the late seventies the first full carload of oranges was shipped from Los Angeles to the Eastern markets but it was not till 1886 that the first full trainload of this famous California fruit went from Southern California to Eastern points. By 1889 there was a full million of the new navel orange trees growing on California lands.

California was destined to continue as a land of specialized agriculture and gradually the list of its diversified products grew in spite of the large land use ventures of the wheat kings, cattle barons, and flockmasters. Compilation of reports from 52 counties in 1883 gave the following figures on the still leading grain acreage and production:

Wheat.....	2,634,710 acres	...32,659,870	bushels
Barley.....	775,405 "	...19,000,232	"
Oats.....	122,618 "	... 3,632,657	"
Rye.....	29,351 "	... 342,876	"

In a detailed report on fruit production, the Agricultural Society used for an example the J. Routier prune orchard in Sacramento County, to show what could be done with a small fruit farm. The figures for the Routier farm showed the initial investment for a ten-acre prune orchard to be $1,475. This included raw land at $100 per acre, tree stock, planting, taxes, and cultivation for four years. The return for the fifth year was given at $2,000, for the sixth year at $4,000, and for the seventh year at $5,000. The report on this particular fruit rancher's activities in the early eighties, concludes with the statement, "All of this from an investment of less than $1,500".

The Hon. J. Routier was a public official and very much of a civic leader in his community. He reported to the Society in 1890:

"I know a neighbor of mine who out of very ordinary upland or timber land, has been raising more than $200 worth of prunes to the acre for the last two years, and he is now turning every peach tree, every apricot tree, and almond tree on his place into a prune tree, and he is inclined to dig up his fine grapevines and replace them also with the prune tree. There is no doubt that ten acres of bottomland, planted in prunes, can return every year $4,000 to $5,000, and that twenty acres of timber land will return the same amount." (Evidently the term "timber land" meant foothill land covered with oak and other species of trees common to the lower elevations.)

Based on the official agricultural census for 1888, the State Agricultural Society gives the following condensed, rounded-off figures covering production of leading California crops for that year:

Wheat.....	$32,000,000
Cattle and Sheep...	30,000,000
Barley.....	10,000,000
Other cereals.....	7,530,000
Wool.....	5,000,000
Dairy produce.....	6,000,000

Cooperating with the official statisticians, the State Agricultural body in its 1890 report to the State authorities gave the following very optimistic figures on what they termed arable lands in California:

San Joaquin Valley.....	6,845,240 acres
Sacramento Valley.....	5,598,720 "
Coast Valleys, including Salinas, Napa, Russian River and Santa Clara.....	5,000,000 "
Lands lying between the alluvial lands of the Sacramento and San Joaquin Valleys, and below 2,000 feet elevation.....	6,000,000 "
Between the line of elevation of 2,000 to 4,000 feet.....	7,000,000 "
Santa Barbara, Los Angeles and San Diego Coast climate.....	3,000,000 "
Total.....	33,443,000 "

The section of the Society's report dealing with arable land figures set forth the fact that the irrigable area of the San Joaquin Valley was 5,545,280 acres - "by actual ascertainment" - and that all of the Sacramento Valley of 5,598,720 acres received sufficient rainfall to mature annual crops of cereals. It also stated that there were "five million acres of land south of Techachapi reclaimable by irrigation".

In 1890, even this leading authority on California land use could not visualize the extremely high valuation figure to which lands in the State would climb since their report of that year, in analyzing land use, contains the following statement:

"In common observation, good agricultural land is deemed to have reached its highest point of value, $30 to $50 an acre. A greater density of population, of which we have had no experience in California, will urge these prices up from $60 to $75 per acre."

Leaders of the State Agricultural Society were still very much concerned in the late eighties over two of California's main land use problems, the bareness of rural living, and large land ownerships. They spoke of the immense areas in the wheat growing sections, harvested by nomadic labor, on which no structural improvements existed for miles in any direction. They seemed somewhat cheered by the fact, however, that small farms were gradually increasing in number.

Numerous agricultural ventures which were to attain prominence in the California land use picture later were started about this time. Walnut and almond trees were being planted on a small scale and more small vineyards were coming into existence. The poultry industry, which was later to become so large, was making good headway on small land holdings. The agricultural census for 1880 shows a total of 1,426,000 chickens on California farms, with an annual egg production of 5,771,000 dozen. By 1890 this industry had grown to show a total of 3,504,000 birds, with a production of 13,679,000 dozen eggs. Poultry husbandry was beginning to take on its later specialized form.

Land Booms

Reading between the lines of the California State Agricultural Society's report for 1890, there seemed to be again somewhat of a lukewarmness on the part of Southern California towards the rural affairs of the State at large. Exhibitors of farm products from the extreme south were few in number at the State Fairs of the later eighties. This might have been due in part to the unprecedented land boom which that section of the State was then experiencing since overnight, as it were, Southern California jumped from a relatively quiet pastoral existence into a boom somewhat paralleling that of the great mining days of the northern part of the State.

California's almost 100 years of American rule had been marked by periodic land booms and scarcely a year passed without one or more sections of the State experiencing a sudden surge of prosperity - with perhaps a quick later letdown - connected with some land-using venture. A mineral discovery, a new

agricultural crop, industrial expansion, the advent of a new transportation system, timber, recreational, or some other form of land use development, created boom conditions sometimes covering a considerable area of the commonwealth, and added to the population growth of the section affected.

The boom which hit Southern California in the late eighties, with Los Angeles City as the hub, was one of the most remarkable in the State's history, especially in view of the fact that the era of prosperity ushered in during its first hectic days continued in a quieter and more progressive manner during the decades following.

From 1869 till 1887, the Southern Pacific Company had an almost complete monopoly of overland transportation into California, and throughout the State. That year the Atchison, Topeka and Santa Fe Railway system, possessor of heavy financial assets and huge land grants farther east, entered Los Angeles, thereby challenging the grip held by the Southern Pacific on California lands and their development.

Building by way of Cajon Pass, it avoided the crossing of the high Sierras and continued on up through the San Joaquin Valley to San Francisco. Generally speaking, the new railroad was received with open arms by rural California, and its coming was hailed as a distinct challenge to the domination of the older railroad system. Railroad freight rates played a big part in the economic life of the California farmer, and without competition the single railroad system could almost dictate its own terms on rate schedules.

The Santa Fe people, without the vast California land resources held by their competitor, were just as anxious to attract settlers to the Pacific Coast, in order to create the freight and passenger business necessary for their economic existence. One of the first results of this railroad competition was a rate war which went on for some time. Passenger tickets from Missouri points to Los Angeles, normally costing $125 each, dropped to $5 per passenger for a period of three months and actually as low as $1.00 for one single day, while this rate war was in progress.

Here was an opportunity for which thousands of Americans had been waiting, a chance to see California at a price which fitted any pocketbook. In other sections of the United States almost any current tale, of which California was the subject, was still readily believed by the rank and file of American citizenry. These stories, indeed, such as the fertility of the soil; the kindness of the climate; the size and variety of fruits and vegetables; Christmas oranges and roses; gigantic trees unknown anywhere else in the world; gleaming yellow gold particles found in the streets of old mining towns; all had a basis in fact.

Railroad advertisers enlarged and capitalized on these rudimentary facts and flooded the Eastern and Mid-Western States with appealing literature. People flocked to California, particularly to the southern section, by the thousands. Many of these tourist-emigrants stayed. Some had money to invest and joined in the orgy of frenzied land speculation which swept over the southern counties. Farm lands in small tracts were sold by the thousands of acres, some of them waterless and worthless. In the main, newcomers seemed obsessed with an overpowering desire to acquire small parcels of land in some of the new California towns slated for fabulous prosperity.

In 1887, in Los Angeles County alone, recorded deeds filling official record books covered small land transactions involving approximately one hundred million dollars. Since deals were not made on a full cash payment basis, it can be assumed that the actual sale prices of the lands transferred would be at least double that amount. Farm lands which sold for $100 per acre in 1886 brought $1,500 per acre in 1887. Los Angeles City lots selling for $500 in 1886 at the very start of the land boom, jumped to as high as $5,000 in 1887, to drop back to their original price in 1888. Most of the transactions called for only a nominal down payment, and later much of the lands were lost by the purchasers through default, adding to the already large land holdings of the bigger capitalists, by whom they were picked up at bargain prices.

Between January 1, 1887 and July 1, 1889, sixty new towns and cities were laid out in Los Angeles County alone. By 1890, these 60 embryo cities had a total population of less than 3,500, the sites of some being marked only by rows of gleaming white stakes.

One of the most unprincipled of the land speculators of that period was a man named Simon Homburg who in 1887 bought two widely separated quarter-sections of unsurveyed public land bordering on the Mojave Desert. He laid out two towns on paper only, naming one Manchester and the other Border City. Most of his business was done by mail, his patrons being gullible Easterners. The lots in these paper cities cost Homburg about ten cents each, yet he encountered such an eager market that he was able to sell several thousand of them for as much as $250 apiece.

Altho the town sites of Manchester and Border City were only "dream cities", Homburg's venture at least had the virtue that he had purchased the land outright from the government and could grant clear titles. Some of the land sharks sold real estate with such clouded titles that cases reverberated through the courts for years after, as innocent purchasers tried to clear their legal rights to the land they had bought.

Land speculators in 1887 laid out thirteen new towns along the Santa Fe route in a matter of three months. Altho many of the new towns died a'borning, people paid a fancy price for a fragment of land in these cities to be. In the little town of Azusa, one of the few places which did really develop later into a small, prosperous urban center, lines of people waited all night long so that they would be among the first comers to secure lots at boom prices.

As a result of the land boom period and possibly also as an indication of the real development yet to follow, the population of Los Angeles County increased from a figure of 33,391 in 1880 to 101,454 as of January 1, 1890. The City of Los Angeles itself built up from 11, 183 on January 1, 1880 to the 50,395 people with which it was officially credited on January 1, 1890.

Dawning Timber Development

Altho American lumbermen were viewing the forests of California with envious eyes and acquisition of timberlands under the Timber and Stone Act of 1878 was working apace in adding to their large land holdings, large scale lumbering operations had not yet materialized by 1890. A good deal of timber was still being cut on public lands by trespassers, most of whom were small operators reaching out beyond the boundaries of their own lands. Accounts of this were made by the infant State Board of Forestry. Altho the volume cut was probably much greater by virtue of this trespassing, the official figure for lumber production for California was 305 million board feet in 1879, and this had grown in volume to an annual timber cut of 527 million board feet in 1889.

Tourist Attractions and Wildlife

Most tourists coming to California in the seventies and eighties, were interested in seeing orange groves and witnessing the marvel of roses blooming at a season of the year when a large part of the nation was buried under snow. However, the writings of such great nature lovers as John Muir, had drawn attention to California's outdoor wonders and the splendid and unique mountain scenery to be found in the Sierra Nevada. As early as 1872 the Southern Pacific was conducting overland tourist excursions to the Pacific Coast with special rates for transportation and hotel accommodations. This was the beginning of what was to become a great tourist traffic.

A chapter in Charles Nordhoff's guide book to California, published in 1875, was written entirely for the benefit of pleasure-seeking tourists. It lists in some detail the attractions the State at that time had to offer. While Nordhoff plays up the urban attractions to be found in San

Francisco, such as the Seal Rocks, Cliff House and that city's famous Chinatown, he also recommended trips into the country. For example, he recommended a five-day horseback, camping trip through the Yosemite Valley, trips to Donner Lake, Lake Tahoe, and Mt. Shasta. He characterized the stage trip to the Geysers, via Healdsburg or Calistoga, as "exciting, but not dangerous".

This early-day writer enlarged on the health-giving qualities of the climate of Santa Barbara, San Diego, Los Angeles and San Bernardino, but warned the tourists "not to expect too much in the way of hotel accommodations". He gave the rate for hotel rooms as $10 to $14 per week with fires extra. He told that horses for the traveller's convenience could be purchased for $20 to $50 a head. As if visualizing that such things would later come, he stated, "do not expect to find yet in Southern California artistically-furnished pleasure resorts". Nordhoff mentioned the wild game and excellent hunting, and told of seeing "two square miles of wild geese" so tame that they would hardly get out of the way of a rider passing among them.

In the eighties and nineties, people on Eastern farms generally called sleigh robes "buffaloes", whether they were cloth, fur, or actual buffalo skin. Each Eastern rural family in the cold belt usually had at least one sleigh robe made out of buffalo hide. The story of the passing of the buffalo is well known. According to the best estimates of the government, there were five million buffalo in the United States in 1871, and only around 300 in 1885.

Due to the ruggedness of so much of the terrain, California wildlife did not suffer as severe depletion in the 1870-90 era as the buffalo of the Plains, but there were few protecting laws and ordinances. While upland birds and larger mountain wildlife existed in plentiful numbers into later decades, they were soon exterminated in the Great Valley Region by the influx of settlement, or forced to take shelter in the surrounding hills. Valuable fur-bearers, such as the beaver, pine marten and sea otter, had been practically wiped out of existence by professional trappers. Shore birds, mentioned as being so plentiful by Nordhoff, were bagged by the almost countless thousands, and were a drug on the market in the urban centers.

Indians

The people most intimately connected with California lands - their original owners and users, the native Indian - were undoubtedly the most neglected in California's formative years. During the gold rush days,if they were in the way they were pushed off lands which they had occupied for centuries with as little compunction as if they were wild animals. Here and

there, fair-minded officials, mostly military commanders, signed treaties with the tribes. These were usually abrogated by the next white invaders of the territory often in spite of the fact that most United States land laws recognized certain rights of the original occupants.

Time and again the Indians kept their pledged word sacred - usually the white men did not. While military expeditions punished the red man for murder and other war-like acts committed under the savage's own code of warfare, the Bureau of Indian Affairs endeavored to rehabilitate their lives on lands not desired by the whites. Such incidents as the killing of some 130 Indian men, women and children by Trinity miners in the fifties, mainly because the Indians insisted on fishing in the stream which had furnished subsistence to their tribe for centuries, were not at all uncommon.

It is a rather strange fact that while the average California settler referred to Indians as "varmints" to be treated accordingly, most of the early cavalrymen had a certain amount of respect for members of the race whose hand was against soldier and settler alike. The California Indian was never such a fighting warrior as was his brother of the Plains. While redskin murderers, horse-thieves, and marauders were fought from one end of California to the other, the only Indian war of consequence on California soil was the Modoc Indian War of 1872-73. Like nearly all American Indian wars, this campaign also involved the possession of Indian hunting and fishing grounds.

Just prior to the opening of the 19th Century, a section of the populous Klamath Indian tribe broke away from their brothers and established themselves in the Tule Lake, Clear Lake and Lost River section of northeastern California and southern Oregon. The country teemed with fish and game and the new tribe, later called the Modocs, prospered. They became bitter enemies of their former associates, the Klamaths. Perhaps the rigors of the climate had something to do with their development into warlike people. They preyed constantly on the neighboring Klamaths to the north, and the Pits to the south. It was natural for the Modocs to challenge the first white men into their territory.

When Fremont passed through the Modoc country in May 1846, hurrying to the scenes of American conquest farther south, the Modocs made a night attack on his camp, and killed four of his best men. But for the quick action of the famous scout, Kit Carson, who was a member of the party, Fremont's entire command would have been annihilated. Later that same year, a new overland trail was blazed by Oregon pioneers

through the hunting grounds of the Modocs and as the emigrant trains began coming, they promptly gave battle. During this period they wiped out several emigrant bands.

California and Oregon volunteers soon retaliated and in 1864 the war power of the Modocs, as an organized tribe, was broken when their chief, Schonchin, ceded most of the tribe's hunting grounds to the United States. Schonchin kept his pledged word that he would never again raise his hand against the white man but he was unable to control his followers when the government made the mistake of placing them on a reservation with their hereditary enemies, the peace-loving Klamaths.

A subchief, Kentipoos, called Captain Jack by the whites, together with a number of his dissatisfied followers, often left the reservation at will. They hung around the mining areas and farming settlements of northern California and southern Oregon, living off the land, stealing cattle, and more or less terrorizing the countryside. Captain Jack's avowed intention was to regain his tribal lands. He led his band back there in November 1872. Hostilities broke out that same month when they killed several of a party of soldiers sent to move them back to their reservation.

The Modoc warriors faced a military force many times their number. They were handicapped by the presence of their women and children, and at no time had more than 75 men as their greatest fighting strength. Nevertheless, they were not subdued till May 1873. This campaign was waged for the possession of a comparatively small segment of California land. It cost the lives of almost one hundred soldiers, volunteers and settlers, and one general.

Superintendent of Indian Affairs, Edward F. Beale, reported that 15,000 Indians had perished of starvation in California in 1852 and 1853. In 1853 action was taken by Congress to establish Indian reservations throughout the State and Doctor O. M. Worencroft, heading an Indian commission and State survey, estimated that there would be 80,000 Indians on reservations in California before the end of 1853. From the wording of the document it is evident that he referred only to tribes living in the northern half of the State.

The tribes formerly under the control of the Missions suffered greatly. The Indians generally adopted the white man's vices without also absorbing his virtues. They were neither allowed to fend for themselves nor properly cared for as wards of the State; every man's hand was against them. Helen Hunt Jackson's "Ramona", one of the greatest of California novels, pictures in detail the sufferings of a people who after all were the original proprietors of California lands. It has been estimated

by students that from the time of American occupation until the eighties, the Indian population of California had been reduced approximately 75% by war, disease, and famine.

Helen Hunt Jackson's book "Ramona" and its companion book "A Century of Dishonor" did much to arouse public opinion. Other champions of the Indian appeared from time to time. General Edward F. Beale kept several hundred Indians on his large El Tejon Rancho on a semi-self-supporting basis, churches and relief organizations maintained numbers of them as an act of charity, and the Federal Bureau of Indian Affairs did the best they could with restricted appropriations. Here and there throughout the State Indian families and groups employed occasionally as miners, vaqueros and farm hands, had fitted themselves into the economic rural life, but generally speaking the race was social and economic outcasts.

A bad name stayed with the Indian through several decades of California history. Never a natural town resident, he was invariably a part of the rural picture. Albeit unkempt and dirty, he made a very good farm worker when kept away from alcohol. His weakness for liquor was one of the blackest marks against his character. His status in the eighties is illustrated by the fact that while Chinese laborers on the large ranches received $1.50 per day and board, the stipend paid the Indian was $1.00 per day, without board.

That the public conscience was finally working in connection with the Indian problem, however, was evidenced by the passage of the Indian Allotment Act on February 8, 1887. This allowed each Indian head of a family, one-quarter of a section of land, and each single Indian and each orphan child under eighteen one-sixteenth section. If the land was fit for grazing only, these areas were doubled. Due partly to the Indian's partiality for the grazing type, and partly also because the best agricultural lands had already been taken up, the bulk of the Indian allotments were wild lands generally unfit for cultivation.

The workings of the Indian Allotment Act later showed sharp contrasts. Three and four decades after its passing, Indian families on the California side of the State line were eking out a bare existence on second-rate grazing lands while just over the border in Oregon members of the Klamath tribe were rolling in wealth by the sale of timber from their allotments.

California Indians benefited somewhat from the Act of July 5, 1884, which turned back military reservations to the Secretary of the Interior for re-disposal. Some of the military lands were turned over bodily to the Bureau of Indian Affairs to be held in trust for members of the Indian race. Usually these abandoned military plants were converted into schools to train Indian youth in white man's ways.

Rural Land Values and Rural Problems

In 1880, the population of California was 865,000. The increase in number of residents during the previous decade was 95 percent in Southern California, and 51 percent in Northern California. Between 1880 and 1890, the population of the State increased to 1,213,000. The percentage of increase for the South was 182, with an increase of 26 percent for the North, and an average population increase for the entire State of forty percent.

The number of California farms in 1880 had reached 35,934, totaling 16,593,742 acres, or an average of 462 acres per farm. The average valuation was $15.79 per acre. By 1890 the Bureau of the Census gave the number of farms in California as 52,894, embracing 21,427,293 acres. The average value per acre had risen to $32.53, and the averaged-sized farm dropped to 405 acres. This government agency stated that in 1880, 10,669,698 acres of land included in farms was classed as "Improved", and 5,924,044 acres as "Unimproved".

In 1890, a total of 12,222,839 acres of farm land in the State was classed as "Improved", and 9,204,454 acres as "Unimproved". The total value of farm land and buildings thereon rose from $262,017,282 in 1880 to $696,116,630. The value of farm products increased from $59,721,425 in 1880 to $87,033,290 in 1890. The State Controller's Office gave the total assessed valuation of all California in 1875 as $618,083,315. This had risen to $859,512,384 by 1885, and to $1,101,137,290 by 1890.

California had definitely passed the pioneer stage of development by 1890 and far-sighted conservationists and economists began to take stock of the natural resources with which the State was blessed. With the best farming-type lands now almost entirely in private hands representing an empire largely undeveloped, the real estate business and land speculation became one of California's leading business activities. As will be seen from the foregoing figures, rural land values had doubled in a single decade. Fortunes were in the making for thousands who had secured land for an extremely small fraction of its later market value.

The 1870-1890 era marked the birth of the arc light and the incandescent lamp, the telephone and other revolutionary inventions. But little had yet been done to relieve the drab existence of rural life in California. Rural California was mainly represented by three classes of people. First was the big absentee landowner - individual or corporation - whose agricultural or mining interests were usually worked by lessees, sharecroppers or hirelings or who, more often than not, allowed

all or a greater part of their holdings to lie idle. The wealth of the owner of idle lands increased by leaps and bounds due to the increase in land values through the development of surrounding lands by others. If the big landowner did happen to reside on the lands he was using, operations were conducted on a large scale with the lord of the manor living a luxurious existence.

The second class, and by far the largest in number, was composed of the small independent farmers, stockmen, miners and timbermen. This was the class of citizen which the American way of living produced and fostered as the backbone of the nation's strength and prosperity. He was the producer.

The third class of California rural residents was the hired laborers, - miners, farm hands, or vaqueros - often nomadic, and living from hand to mouth as seasonal labor demands called for their services for the harvest. From this class developed the "bindle" or "blanket stiffs". A very thin dividing line existed between the nomadic farm laborer and the genuine hobo or tramp. The social aspect of farm laborers was much different from that of the East or Middle West, where the hired man was virtually a member of the farm family and himself a potential tenant or landed proprietor.

First the Indian, always a social outcast, labored on the ranchos and farms; then came the Chinese, also of a separate social caste, flooding the rural districts during the post-mining and main line railroad construction periods. The white farm laborers following were, as a class, almost as much divorced from the social life of the rural communities as were the Indians and Chinese. Herded in cheerless bunkhouses on the large ranches, or camping out in the fields during their active employment, they lived almost as empty an existence when congregated in cheap urban rooming houses and saloons during their unemployment periods.

The State Agricultural Society in its 1886 report, referring to farm laborers, said in part: "Our nomadic hordes of farm hands must have all the year around employment and an abiding place with their work; they must be fed and housed as civilized men should be fed and housed; the wide gap between employed and unemployed must be closed".

The lot of the tenant or sharecropper was little better than that of the hired laborer. Usually a family man, his children often were denied the educational and social facilities available in the towns and cities, and many of them unable to foresee any fuller existence, migrated to the urban centers of population, thereby helping glut the metropolitan labor market.

The small freeholder, ever needing more labor in the trend towards intensified special farming, suffered from the labor situation. He suffered also from occasional floods and drouths; poorly constructed and ill-defined water laws; problems of transportation and crop marketing; all were serious problems to him. Often he had living conditions little better than those enjoyed by the nomadic laborer, sharecropper, or tenant farmer.

These factors contributed to social unrest in the rural sections of the State. Legislation dealing with land use problems was not keeping pace with the needs of rural communities. Legislatures, whose members were more interested in urban development and in the desires of big land monopolists than in the affairs of the rural resident and freeholder, were also partially responsible for the germination of the idea of rural cooperatives which later did so much for the middle-class farmer.

The semi-social organizations which sprang up over the countryside during this period of the State's history were the forerunners of the later great California cooperatives. The California Farmers' Union was organized in 1872, but lasted barely long enough to memorialize Congress in seeking relief from what they termed "impositions and oppressions by railroad monopolies".

The Farmers' Union graduated mainly into the California State Grange, a branch of the national order of the Patrons of Husbandry. Partly social and fraternal, and purely rural in its very practical platform of farm betterment, this movement swept the country in the seventies and eighties, and the collective granges in California became a voting element which sometimes constituted a deciding factor in State-wide electoral problems. There is little doubt that the granges of the eighties were pioneers in a movement towards better rural economic and social conditions in the California commonwealth.

One of the chief targets of attack by organizations of rural residents then, as in later decades, was the inequitably-taxed large land holdings. In addition to the protests of the rural organizations themselves, large land holdings induced such frankly socialistic writings as Henry George's "Progress and Poverty". This was responsible for the birth of the Single Tax movement designed, in its operation, to spread the burden of taxation over unproducing, undeveloped lands being held for future use or speculation. George's single tax scheme involved the taxation of the land only, regardless of the value of any improvements thereon.

The course of California history has been marked by the establishment of numerous cooperative colonies in almost all sections of the State. These colonies founded by religious sects; by

emigrants from some particular section of a foreign country; by groups whose individual members shared certain socialistic theories; or by organizations and individuals as philanthropic ventures, have played a large part in rural land use. Many of these colonization schemes were extremely successful; some of them were failures. Most of them later broke up.

During a period of California rural social unrest one such cooperative colony came into existence in 1887 on the upper waters of Kaweah Creek in Tulare County. Its members were composed mainly of nomadic farm laborers of the better type and tenant farmers seeking an anchor on California land. They were unfortunate in their choice of a site when some fifty in number, they filed individually under the United States land laws on a section of land well-watered and timbered and passed over by previous settlers because of its isolation and inaccessibility.

With little individual capital but under apparently good leadership and management, they constructed eighteen miles of model-graded road to reach their mile-square land empire. After some four years of occupancy, when the ill-chosen site caused their eviction by the 1890 Act of Congress creating the Sequoia National Park, they possessed a sawmill, a shingle mill, woolen mill, electric light plant, irrigation works, farming equipment and comfortable homes. Later appraisers set the value of the colonists' property, largely represented by their own labor costs, at $600,000, clear of all encumbrances.

With the high prices to which California farm lands have now soared, beyond the reach of the average landless pioneer of today, the history of the successes and failures of these non-government-subsidized land colonies will probably be drawn upon by land use planners of the future.

Until well into the nineties, a good deal of the use of California land was "misuse". The rank and file of land users had not yet realized - nor perhaps greatly cared - that they could not continue "soil mining", and "timber mining", indefinitely after the manner of the get-rich-quick mining days.

As has perhaps marked the economic progress of all parts of our Great West, rural California was slow to grasp the fact that progress meant change; that areas with a density of population of twenty per square mile meant different land use practices from those having one inhabitant to every twenty square miles. It was only when his own pocketbook was affected that the average rural resident became sufficiently aroused to join with his neighbors in concerted action for change and betterment of the use of the lands from which he wrested a living.

Many farmers carried on on the basis that "what was good enough for Dad is good enough for me". The few inhabitants of the old pueblo of Los Angeles disposed of their garbage by the simple expedient of throwing it into the street where wandering hogs performed scavenger duty up to the limits of their desires and ability. It was obvious that Los Angeles City with a population of a hundred thousand could hardly use the same methods for if they did the greatly increased volume of garbage would furnish breeding grounds for millions of epidemic-spreading flies, to say nothing of the inconvenience and danger to traffic by the herds of wandering hogs.

It is yet amusingly related that when the pressure of increasing population made it imperative to construct a sewage system in the City of San Bernardino, many of the old Mormon pioneers bitterly opposed the project. "Have a latrine in my house? No! Sir!", they exclaimed. The place for this adjunct to living had always been the wide open spaces and legal action was sometimes necessary to secure the removal of the often unsightly, time-honored, outdoor latrine from city premises.

Since 1875 Luther Burbank in Sonoma County had been quietly conducting his experiments with plant life and proving, not only that nature could be improved upon in management of orchard, field and garden, but also that nature herself needed some assistance. This was based on the theory that when man disturbed nature's balance, reparation of some sort must follow

Here and there "prophets in the wilderness" were urging definite steps for conservation of the State's lavish natural resources. They urged some form of legal control to halt exploitation and continuing expansion of the holdings of land barons, made so easy by virtue of existing land laws. Gradually the inner consciousness of the million or more Californians was being roused to the need for action, altho it was a later decade before any positive action was taken.

The 1871-1890 period in California brought the wheat kings who supplemented and sometimes pushed aside the cattle baron class to develop the largest scale land cultivation so far in the history of mankind. It also brought a turn for the worse, if anything, in living conditions for a large part of the rural population. It brought great damage to the mountain areas by roving bands of sheep and, all in all, general misuse and abuse of all types of rural lands. In spite of it all and the fact that California, as it were, was pulling herself up by the bootstraps, the Commonwealth made great strides in industrial and agricultural development.

CHAPTER IX CALIFORNIA'S WATERED LANDS, 1769 - 1890

Water Supplies

The main factor in the use of California lands is water. For four months of the twelve California often has too much water; for a good part of the other eight months, too little. The old Mexican saying referring to the period of the year between June and October when rain rarely fell was that "the land went to sleep".

Water control has always been by far the leading problem. It involved the very existence of the California commonwealth, as its citizens from first settlement sought to provide for nature's somewhat erratic distribution of water over the lands. It is a trite saying and one often repeated, that if artificially applied water were withheld from California lands for a single year, the greater part of its most intensively-used land area would revert to desert and its general economic existence be practically wiped out. As California is generally associated in the public mind with the appellation, "The Golden State", it is little wonder that writers sometimes refer to its water resources as "The White Gold of the Mountains".

The early day Spanish explorers found water in plenty but their explorations never considered the immensity of its later use. They spoke of the streams mainly in connection with the problems involved in getting their expeditions across them. Friar Font's diary, kept in connection with the De Anza expedition of 1773, mentions the Santa Ana River in Southern California as a beautiful, clear, crystal stream with a very rapid current and an average width of fourteen feet. This description was repeated by other chroniclers of the Spanish period. Later, Mexican and American explorers mention the clear streams flowing from the mountain areas in all parts of the State. Captain W. H. Emory, in a diary kept in detail in 1847, refers to the same Santa Ana River as a "fine, dashing stream flowing over a sandy bed". This soldier-explorer also mentions the San Gabriel River as being one hundred yards wide, knee-deep, and flowing over quicksands. In spite of the fact that frequent mention is made of floods all during the Spanish and Mexican regimes, the muddy California rivers of today were unknown until the gold rush period, shortly following the American occupation.

Mention has been made of the wide difference of precipitation in California, ranging from one hundred inches in the North Coast Region to less than five inches in the Imperial Valley in the far south. Some water experts have estimated that

approximately three hundred billion tons of water fall across the State in an average winter in the form of rain and snow, and that enough water is stored in the Sierra Nevada Range to cover the approximate ten million acres of the great central San Joaquin and Sacramento Valleys to a depth of four feet. These waters are poorly distributed, however. During the period of recorded California history, flood and drouth conditions have followed each other in somewhat irregular patterns. In the southern Great Valley area from Kings River south, 5,100 square miles of watershed produce three million acre-feet of water; from Kings River north, 7,500 square miles produce 8,500,000 acre-feet.

Crude weather records, some of which survived mission secularization, were kept by the mission priests. Fragmentary records were maintained by early American settlers. Meteorological and forestry scientists have been able by a study of tree growth rings and other unwritten evidences, to construct records of recurrent wet and dry cycles. Modern reliable precipitation records date back to 1877 for a large area of the State. The following tabulation shows precipitation records over a long period of years in some of the wettest and driest areas of the State outside of the mountain sections:

CALIFORNIA PRECIPITATION AT SELECTED POINTS

Place and General Area	Elev. Feet	Period of Record	Precip. in inches: Maximum	Minimum	Mean (inches)
Eureka-North Pacific Coast	62	1887-1930	74.10	20.67	40.20
Red Bluff-No. Sacramento Valley	332	1877-1930	53.22	11.27	24.41
Sacramento-South Sacramento Valley	69	1849-1930	36.35	4.71	18.18
San Francisco-San Francisco Bay Reg.	155	1849-1930	49.27	7.42	22.21
Fresno-Central San Joaquin Valley	327	1881-1930	19.45	4.96	9.54
Los Angeles-South Pacific Coast	438	1877-1930	38.18	5.59	15.01
San Diego-South Pacific Coast	87	1850-1930	25.97	3.75	9.73
Brawley-Imperial Valley (Desert Reg.)	105	1909-1930	5.28	0.30	2.55
*Reno,Nev.-Northeastern Mt. Region	4,532	1888-1930	15.36	3.79	8.06

(*In arid sagebrush region just east of Sierra Nevada Range.)

One reconstructed record covering the Southern California area and going back to 1769, states that 55 percent of all seasons had less than average rainfall, and that one-third of the seasons show a rainfall of less than 80 percent of the normal.

In 1795, due to scant moisture and resultant crop failures, half of the Indian neophytes at the San Gabriel Mission were placed on half rations, and the balance sent to the mountains to rustle for food. In 1810 another severe drouth was experienced in California, followed by eleven years of excessive rainfall. In the winter of 1825 floods were frequent and heavy all through the southern end of the State. There was an immense volume of rain during the winter of 1839-40, one storm continuing without cessation for forty days and nights.

Curiously enough, floods often occurred during winters when the total seasoned rainfall was comparatively low, the bulk of the precipitation coming in one or two heavy storms. Besides local floods in specific areas, general floods occurred throughout the State in 1825, 1833, 1840, 1850, 1859, 1862, 1868, 1876, 1884, 1886 and 1889. In addition to those of 1825, floods assumed disastrous proportions in 1840, 1862, and 1884.

Intense rainfall marked the years 1810 to 1821, followed by a severe shortage of precipitation during the decade of 1823 to 1833. A deficiency of rainfall, broken by an occasional winter of heavy precipitation, marked the 40-year period from 1842 to 1882, while from 1883 to 1890 the rainfall was above normal with two very exceptionally wet years. The worst drouth ever known in California was that of 1862-64, before the storage of water had become a practice on anything but a very small scale.

Irrigation Projects and Problems

Immediately after the establishment of the missions and pueblos, irrigation became part and parcel of land use. With a sparse, scattered population, the problem was comparatively simple, as ditches were dug to divert the waters of the nearest living stream over the orchards and gardens of the haciendas and missions. Rude dams were constructed to hold reserve water supplies during the summer months when streams and springs were at a low ebb. Probably the largest project in pre-American days was the mile and a half canal constructed at the Santa Clara Mission.

The gold rush days and the influx of miners brought about a considerable expansion of water use as the miners dug their ditches for gold washing operations or to divert streams from their channels so that the gold could be taken from the gravel

in the original river bed. Thousands of miles of these ditches were dug by the miners during the fifties, forming the nucelous of the spider web of artificial waterways used later to convey waters of the mountain areas to the valley agricultural lands.

In the seventies, over 4,000 miles of these miners' ditches were already in use by California irrigators and in this sense the miner compensated somewhat for his misuse of California lands by bequeathing to his more permanent successor, the farmer, these thousands of miles of water passages. In 1859, Colonel E. D. Baker, noted California orator of his day, speaking at the annual state fair, made the prophetic statement, "The time will yet come when the ditches which traverse the whole mineral regions of California will be more valuable for agriculture than they have ever been for gold mining".

The right to the use of water as a controlling factor in the use of land was recognized by California's earliest legislators. In 1850, the State Legislature passed a law which made the Common Law of England applicable to riparian rights on California streams. It required "the surveyor-general to prepare plans for improvement of irrigation, providing drainage, and furnishing irrigation water". However, the provisions of this law of 1850 were somewhat abrogated the following year when the same law-making body enacted legislation providing for the appropriation of water.

The Water Appropriation Act of 1851 required a notice to be posted showing claim, size of water diversion conduit, manner of taking, and purpose of use. It provided that a copy of the notice was to be recorded in the county in which the water diversion took place. The law allowing appropriation of water in effect made riparian owners merely preferred appropriators. Curiously enough, it remained unchallenged for some twenty years.

The Water Appropriation Act was really somewhat ridiculous in its workings. For instance, where the San Joaquin River had a discharge of approximately 6,000 cubic feet per second, recorded notices claimed 914,286 cubic feet per second. Other streams with a flow of 5,000 to 10,000 cubic feet per second had as high as 750,000 cubic feet per second recorded in claims against them.

As with the "laissez-faire" methods which marked mining operations for several decades, and the laws then governing the acquisition and use of the land itself, the water laws were exceedingly slack and ill-defined. The courts generally recognized the fact that priority use and occupancy gave title to the water but little heed was paid to the quantity involved.

Some small landowners whose lands were strategically located on live streams or embraced sources of living springs, were able to control excess water which could be logically used on lands other than their own. One large land speculator, by the purchase of 200,000 acres of land in Kern County, was able to control 500,000 acres by his ownership of water on the smaller area.

As settlement and use of California land increased in intensity litigation over water inevitably came to take its place in the California courts along with land litigation as the leading item on the dockets. Up and down the length of the State water suits made their slow way through the courts and the cost of securing or defending water rights spelled financial ruin for many an innocent land purchaser.

Water suits between the City of Los Angeles and riparian land owners dragged through the courts for three and four decades. A single phase of one of these Los Angeles suits of some twenty years duration lasted through seventy-two days of court proceedings and the testimony taken during this one period of its progress through the courts filled 9,000 typewritten pages.

Irrigation of farmlands on any extensive scale had its birth in the semi-arid San Joaquin Valley. The first project of any consequence was a large canal built by General Edward F. Beale in the early fifties to water that portion of his El Tejon Rancho lying in the extreme south of the Valley.

Moses Church, the pioneer irrigator, organized the Fresno Canal and Irrigation Company in the early sixties and the canal which he built to convey water to the flat lands where the City of Fresno now stands was completed in 1870. Incidentally, farmers of the nation blessed the irrigators of that section for they gave to the world the famous Fresno Scraper. This was an instrument easily held in the ground and dumped by a light touch, as against the straight-handled, back-breaking slip scrapers formerly in use. Church, had by 1876, been responsible for the building of around 1,000 miles of main and lateral canals, ditches and feeders, while at the same time fighting on behalf of the small land owners against such big interests as Miller and Lux.

In the early seventies Henry Miller, of Miller and Lux, became interested in the schemes of an English engineer named Brereton, one of California's early-day irrigation enthusiasts. Brereton had ambitious plans for an immense canal, 150 miles in length, to be used for both irrigation and as a ship canal from Tulare Lake to San Francisco Bay.

Fired by Brereton's enthusiastic and sometimes practical ideas, we find Miller backing with his almost unlimited finances the San Joaquin and Kings River Canal and Irrigation Company, organized with a capital of one million dollars. With Fresno scrapers and mules, seventy-eight miles of canal were dug by the new company and a dam of brush and sand 350 feet long was thrown across Kings River. This primitive dam, built under the alert eye of Henry Miller, withstood the onslaughts of subsequent floods and lasted twenty-five years before it was replaced with a wooden structure, and still later with one of concrete. In time the main canal was lengthened to 103 miles. Miller, of course, got the lion's share of the water, and at a later date his company controlled sufficient land and riparian water rights to virtually dictate irrigation policies in the San Joaquin Valley.

Somewhat later the People's Ditch was dug in the central San Joaquin Valley. While the bigger project financed by Miller and his associates originally cost one-quarter of a million dollars, the People's Ditch involved no cash outlay at all other than lumber used for flumes and headgates. Led by one of their number, Wm. Powell, one hundred settlers in six weeks constructed for themselves a ditch eight miles long, 24 feet wide, and three feet deep. This project was a good example of rural cooperative effort. One share in the undertaking was issued for each 160 acres of land owned by the farmer-cooperator, and 16,000 acres of land was irrigated by the water conveyed in the main ditch. This was later constructed to a length of 14 miles and completed in 1879.

In 1882, the present site of the City of Pomona in Los Angeles County, was purchased by Moses L. Wicks, public-spirited capitalist and land developer. The land was practically a desert area, but Wicks transformed it into a region of prosperous farms by piping water from the nearby San Antonio Creek and drilling a series of artesian wells. With the evidence of what water could do when mixed with Southern California land and climate, Wicks became an irrigation enthusiast and played a leading part in the development of farmlands in that section of the State. Giving up his large urban interests, he devoted his entire time to the development of rural lands, expounding the possibilities of irrigating land from the underground water supply. The Temecula Land and Water Company, another large early-day irrigation development of Southern California, owed its inception and later prosperous progress to Wick's efficient management.

Wicks was not alone in the development of irrigation by means of artesian wells. Artesian flows were encountered in many sections of the State, usually within rather prescribed areas.

Several existed in the northern part of the Sacramento Valley and a score of good wells were developed in the Stockton area in the middle eighties. About that same time artesian water was brought to the surface on a relatively small scale in Modesto County. Tulare County produced the finest flows of artesian water in the State, there being about one hundred flowing wells in that county in 1884. One of these is reputed to have given forth at that time a volume of approximately one million gallons of water per day.

The development of artesian water in Southern California and the Tulare area encouraged underground water prospecting all over California and it was estimated that by 1887 the State had a total of two thousand flowing artesian wells. Altho in some places good flows were encountered quite close to the surface, some wells were as deep as a thousand feet. Statisticians of the time gave their average depth as 250 feet. With gravity irrigation, artesian wells and a small amount of pumping, not over five percent of the irrigable land area in the Interior Valley Region was being irrigated in 1887.

George Chaffey, Water Developer

The name of George Chaffey will always be remembered as opening up new vistas of irrigation possibilities in the kindly climate south of Tehachapi. Proving the truth of the saying that one acre of average California land, properly watered, would produce crops of Maine and Florida with equal facility, Chaffey tackled the irrigation problem in the San Bernardino Valley some forty miles east of Los Angeles, and was probably the first man to prove the literally upside down existence of the Southern California rivers.

Raging, devastating torrents during heavy rains, these streams shrink to a mere trickle a few hours after the storm has ceased. Above their course through the valleys, the brush-covered slopes of the Southern Coast Region act as giant sponges. Just below these forested slopes is usually found a mesa-like formation of uncultivable land composed of sand, gravel and boulders, interspersed among which are innumerable channels that become part of the main river during flood periods. These "cones", - to use the term by which they are locally known - built up through the centuries from the silt, rocks and gravel washed down from the mountain terrain above, are also immense sponges, supplementary to the giant underground reservoirs of the upper slopes.

George Chaffey, undertaking the development of the land which now comprises the cities of Ontario and Upland and their environs, found that his predecessor, Wicks, had legally acquired title to half the surface flow for the watering of

the Pomona lands nearby. To procure additional supplies, Chaffey drove a tunnel almost three thousand feet into the canyon bed and produced a heavy volume of water. Before long, several thousand acres of land which had formerly been classed as the poorest type of grazing lands, were covered by citrus groves operated by small farmers and irrigated by these newly-discovered waters.

Chaffey was also one of the first irrigation engineers to conserve the use of water by conducting it from the source of supply to the lands to be irrigated by means of concrete-lined ditches and through concrete pipe. So successful were both the Pomona colony founded by Wicks and the Ontario colony for which Chaffey was responsible, that they received world-wide recognition. Some years later Ontario was selected by experts as the leading irrigation colony in the world. Because of his success in California, Australia, struggling with the problem of irrigation on her arid lands, in 1886 bid for, and secured, Chaffey's services. Something over a decade later he returned to the scenes of his original venture to again play a leading part in land and water development in California.

More than one California historian has made the assertion that "God never intended Southern California to be anything but a desert". These lands in the Southern California Coastal Plain developed first by Wicks and Chaffey, not even adaptable in their natural state for the growing of indifferent grain crops, were transformed into veritable gardens by the magic touch of water.

Stories extant in the early days serve somewhat to illustrate the value of the irrigation waters sent through underground channels from the adjacent mountains and the natural aridity of Ontario and Pomona lands. In good-natured rivalry, Pomona settlers warned the Baptist denomination that they could not establish a church at Ontario as there was insufficient water there to meet the requirements of their ritual. As a retaliatory quip, Ontario residents asserted that a travelling circus could not show at Pomona because there was not sufficient water at that place to give the elephant a drink.

Water Laws and Common Needs

Usually ranked against the monopolistic tendencies of large land owners, the smaller farmers and settlers of the Interior Valley Region were in favor of their own small community irrigation projects, and opposed to public control of irrigation structures. Nevertheless, in 1875 the California Grange, wielding considerable political influence, began agitation for the enactment of sound water and irrigation laws and that year legislation was enacted creating the Westside Irrigation

District. The plan of the district included the construction of 190 miles of main ditch from Tulare to Antioch, and involved the irrigation of 505,000 acres of land in the San Joaquin Valley. Action in the matter lagged, however, since Miller and Lux, refusing rights of way, were able to block the plan for ten years.

About this time, foreseeing the intensive future use of California lands, both the Federal and State Governments were deeply interested in a State-wide plan of water development and use. In the middle seventies a Congressional committee of three made a detailed study of California's water problems and produced what was called the Alexander Plan, after Colonel B. S. Alexander, chairman of the committee. This Alexander Plan was a forerunner of and somewhat similar to the Central Valley Project Plan under way at the present time.

A series of water studies were started in 1878 and carried on for years by California's first State Engineer, William Hammond Hall, who collected an immense amount of factual data on the water resources of the State. However, altho the Alexander Plan received official sanction and Hall's data was considered sound, no funds were forthcoming and no further detailed plans for State-wide water use were made for over forty years.

Irrigation in California, - the use of water and all it involved, - was still pretty much of an elusive phantom so far as its legal status was concerned. In 1886, Patrick Hamilton, Commissioner of Irrigation for Arizona Territory, in a treatise covering world-wide irrigation practices, pointed out that there was not yet any law of consequence covering irrigation in California. This investigator quoted the Governor of the State who had a short time previously remarked relative to California's poorly distributed water supply, "The rights to the use of water are undefined and unproven claims".

Big land owners were content to either let their cheaply-acquired land lie idle or carry on large scale farming operations in livestock or grain production. If irrigation of some part of their holdings was desired or necessary, they usually had the capital to establish and maintain their water rights in the courts and to construct their own works. The small, independent land owner had neither the volume of land necessary to conduct large scale farming operations nor the available capital to develop water for general diversified farming or fruit production, towards which California land use was definitely trending. Through the Grange and other farmer cooperatives, pressure was being brought to bear on the law-making bodies and in 1887 the State Legislature passed the famous Wright Irrigation Act, a measure which has since been established as the basic law of California irrigation.

The Wright Act was one of the first legal moves to disturb the tenor of existence of the large rural land monopolists. This act provided for the formation of irrigation districts and authorized such districts to acquire and own real estate, purchase water rights, purchase and build ditches, canals and other irrigation structures, and to issue bonds to raise the necessary funds for construction and operation. The land to be irrigated was itself the security for these bonds. A petition of fifty freeholders and the approval of the local county board of supervisors was all that was necessary to organize a district.

Fundamentally, the law was designed to break up large idle land holdings, and to prevent the owners thereof from obstructing development of adjacent lands. In voting on district affairs the owner of 10,000 acres of land had no more say than the owner of ten. This law, which in spite of minor weaknesses developing later was to mean so much in more intelligent use of California lands, was later upheld by a referendum vote of the citizens of the State, who also approved the companion act of the State Legislature creating a State Water Commission.

Altho California had made a start in sensible water conservation and use, it had by 1890 barely scratched the surface of the problem. Large land holdings were still the stumbling block in the path of rural progress. Millions of acres of fertile lands in one of the finest climates in the world, awaiting only the magic touch of water to bring them into blossoming fruitfulness, were withheld from use by the large land speculators on the one hand, or sketchily used by the large farm operators on the other. The first class gained wealth by the rapidly increasing value of their lands, taxed at an absurdedly low figure; the object of the big land croppers was to wring from their lands every immediate dollar of profit possible, regardless of the ultimate effect on the land itself by poor land use management.

Henry Miller, with his immense holdings managed and operated by hired labor, was a counterpart of a State-wide pattern of wheat, cattle and sheep kings. One wheat grower alone in Sacramento Valley about this time sold the annual crop from his 57,000-acre ranch for a figure of $800,000.

The growth of irrigation was synonymous with the gradual increase in the number of small freeholders. The cattle barons of Mexican days had no need for irrigation projects as their cattle waxed fat on the native herbage; the sheepmen secured free pasturage or cheap forage without the necessity of investing in water development; the grain farmers harvested their crops before the dry summer season was well under way, and the winter rains which produced its luxuriant growth made irrigation unnecessary.

Altho love of the land was a strong characteristic of the Mexican cattle barons, their wholesale use of the land resulted in their downfall. As a class, the cattle barons could exist in their way of life only on immense, undeveloped land holdings. There is little doubt, too, but that the Mexican peonage system of agricultural land use under which there were two distinct classes of rural residents, - the lords of the manor, and their numerous vassals or retainers, - was reflected in later American occupation.

The gold miners of the fifties had no love for the California soil. Much the contrary, in fact, for with them it was purely a case of get-rich-quick, and get out. Out of this class developed the rural adventurers, also after quick profits from field, forest or mine. The sheepmen were mainly nomads with no permanent abiding place. The wheat farmers were frankly soil miners, living a cheerless existence amid their treeless fields. Permeating the entire rural structure were the small renters and farm laborers with no social status at all, and often without hope of ever bettering their financial or social condition.

But by the dawn of the last decade of the 19th Century, the number of independent small landowners had grown so that they were a dominant factor in agricultural land use. Forming the backbone of the American social structure since the days of George Washington, many of this class of citizens were not content with the bareness of existence on much of the raw, dry, California lands. They reached forth for means to sink their roots deeper into the soil, seeking for a permanency of tenure akin to that enjoyed by their forefathers on the New England hills, or the plains of the Middle West.

A common cause or a common problem draws men of any commonwealth together and the universal need of water which could transform California lands into diversified, fruitful production unexcelled anywhere, was creating that common cause. The fact that water, through cooperative effort, could be obtained and brought to their lands gradually inculcated into the ranks of the small freeholders a love of that land on which they had suffered the hardships incidental to pioneering.

Even though nature had perhaps intended California to exist as a semi-desert area, this was no detriment when man's ingenuity could find ways and means to bring the needed, transforming power of water to her thirsty soil. Irrigation, yet in its early stages of development, was destined to play a leading part, not only in the production of California's immense agricultural wealth, but in creating a better rural social existence among a considerable class of its citizenry.

Idle lands and landless farmers would still long continue to be California's major social problem, but tempered, nevertheless, by the presence of the same class of citizens who suffered with Washington at Valley Forge or responded to Lincoln's call to save the Union, - men with an inherent love of their own land deeply ingrained in their innermost beings.
